MANORAMA

TELL ME WHY

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FAMOUS NOBEL LAUREATES

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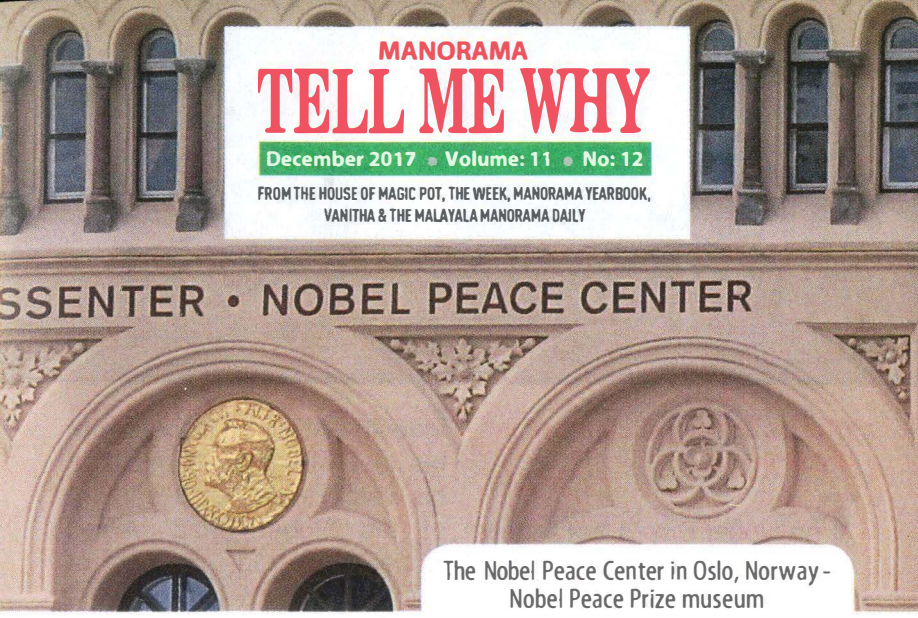
FROM THE HOUSE OF MAGIC POT, THE WEEK, MANORAMA YEARBOOK, VANITHA & THE MALAYALA MANORAMA DAILY



The Nobel Peace Center in Oslo, Norway - Nobel Peace Prize museum

THE MERCHANT OF DEATH

"The merchant of death is dead. Dr. Alfred Nobel, who became rich by finding ways to kill more people faster than ever before, died yesterday." Thus ran an obituary in a French newspaper in the year 1888.

This news was false, because the person who had died was actually Ludvig Nobel, brother of Alfred Nobel, the inventor of dynamite. But the mistaken obituary shocked Alfred Nobel for another reason - he came to know that his public image, after his invention of dynamite, was as a 'merchant of death'. Alfred Nobel felt upset and disgusted by this profile and he wanted to leave a worthy legacy for Mankind. When he actually died in 1896, Nobel left behind a will, leaving 94 per cent of his fortune to be used to create a series of prizes, known as Nobel Prizes.

Today, the Nobel Prize is the most prestigious award on our planet. This issue of 'Tell Me Why,' brings you stories of famous Nobel laureates.

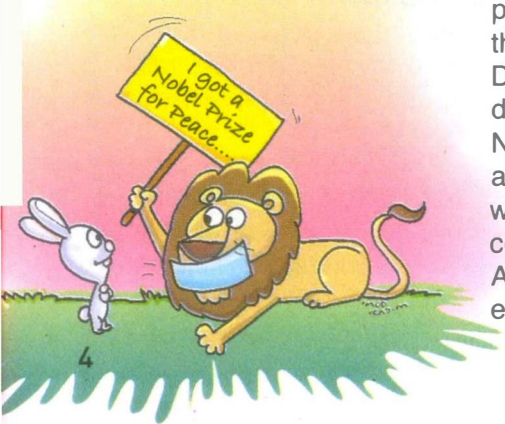
THE NOBEL PRIZE

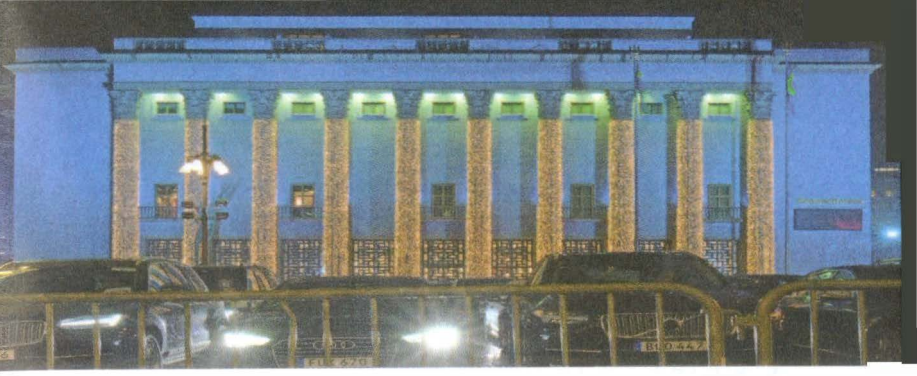
What is the significance of the Nobel Prize?

The Nobel Prizes are widely regarded as the most prestigious awards given in the intellectual realm for exceptional contributions in certain selected fields. These coveted prizes are annually awarded by Swedish and Norwegian institutions.

The foundations for the Nobel Prizes were laid in 1895, when Swedish inventor and industrialist Alfred Nobel wrote his last will, leaving much of his wealth to the establishment of the Nobel Prize. Alfred Nobel instructed that most of his fortune be set aside as a fund for the awarding of five annual prizes.

Since 1901, the Nobel Prize has been honouring men and women from all around the globe for outstanding achievements in physics, chemistry, literature, physiology or medicine, and for contributions to peace. The first distribution of the prizes took place on 10th December 1901, on the fifth death anniversary of Alfred Nobel. In 1968, an additional award in Economic Sciences was introduced by Sweden's central bank in memory of Alfred Nobel. It was first awarded in 1969.





Stockholm Concert Hall, Sweden

Where, and when, does the Nobel Prize awarding ceremony take place?

The Nobel Prize is undoubtedly the world's most prestigious award. The prizes are awarded annually by the Royal Swedish Academy, the Karolinska Institute, and the Norwegian Nobel Committee, to individuals and organizations for their outstanding contributions in the fields of chemistry, physics, literature, peace, economic sciences and physiology.

The prize distribution in all categories, except in peace, takes place annually in Stockholm, Sweden. The Nobel Peace Prize is awarded in Oslo, Norway.

10th December is the Nobel Day.At the Nobel Prize Award Ceremony in the Stockholm Concert Hall that day, the winners in physics, chemistry, physiology, economic sciences and literature receive a medal from the King of Sweden, as well as a diploma, and a cash award.

The Nobel Peace Prize is awarded in Oslo City Hall on the same day.

Did you know?

The Nobel Prize is not awarded posthumously. That's why Mahatma Gandhi never received one, though he was a strong proponent of non-violence.

All Nobel Prizes

Between 1901 and 2017, the Nobel Prizes and the Prize in Economic Sciences were awarded 585 times. With some receiving the award more than once, a total of 892 individuals and 24 organisations have been honoured till date.

How are the Nobel Prize winners selected from each field?

The Nobel Prize winners are announced annually either in October or November. The selection process begins in the previous year. Each year, thousands of universities and national representatives are asked to submit nominations for the Nobel Prizes for the coming year.

Alfred Nobel on a Dutch Postage Stamp

Self-nomination automatically disqualifies the nominee. Prize proposals must be submitted to the Nobel Committees on or before 31st January of the award year. After that, the six Nobel Committees, one for each category, start their work on the nominations received. During September, the committees submit their recommendations.

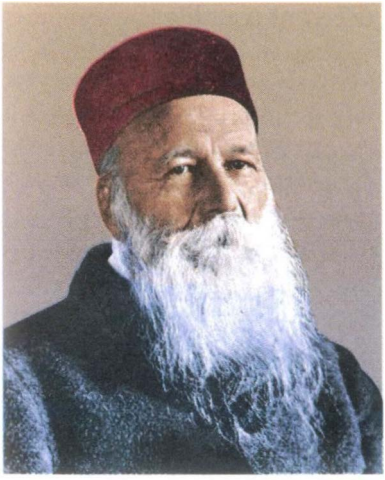
The final decision on the prizes are usually made by 15th November.

NOBEL LAUREATES IN PEACE

Who was Henry Dunant? Why is his name significant in the history of the Nobel Prizes?

Henry Dunant was the first recipient of the Nobel Peace Prize, along with Frederic Passy, in 1901. He was a Swiss businessman and social activist, and above all, the founder of the Red Cross.

In 1859, a battle was raging in the town of Solferino in Northern Italy, which resulted in nearly 40,000 casualties. Henry witnessed thousands of Italian, French and Austrian soldiers wounded and dead. On his own initiative, he organized emergency aid services for the wounded. In 1863, he founded the International Committee for the relief of the wounded, now known as the International Committee of the Red Cross. The 1864 Geneva Convention was based on Dunant's ideas.



Henry Dunant

Having gone bankrupt, Dunant later ended up in the Swiss village of Heiden, where he fell ill. A journalist wrote an article about him which, within a few days, was reprinted in the press throughout Europe.

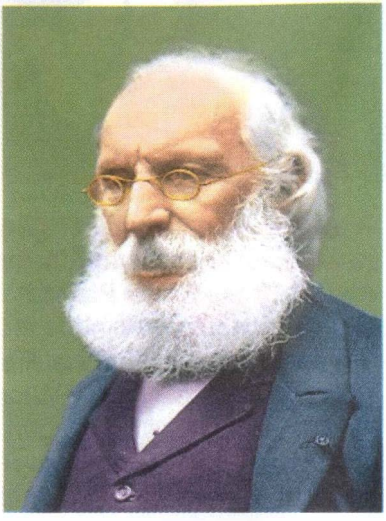
In 1901, he received the Nobel Peace Prize. Henry Dunant died on 30th October,1910. The Red Cross has been awarded the Peace Prize three times till date.

Why is Frederic Passy remembered in the history of the Nobel Prizes?

Frederic Passy was an economist and a peace activist who received the first Nobel Peace Prize, along with Henry Dunant, in 1901.

Passy was born in Paris, France, on 20th May 1822. Passy's work for peace began during the Crimean War. His essays and lectures, which came out in 1857, made him famous throughout the country.

Passy was also one of the founders of the Inter-Parliamentary Union, an organization for cooperation between the elected representatives of different countries.



Frederic Passy

Despite his age, Passy kept up his work for peace. In 1905, when the conflict over the union between Sweden and Norway peaked, Passy declared that a peaceful solution would make him a hundred times happier than when he received the Nobel Prize. Passy witnessed his wish fulfilled. His endurance of a lifetime for world peace gained him the name 'apostle of peace'. He died on 12th June 1912.

CURIOUS FACT

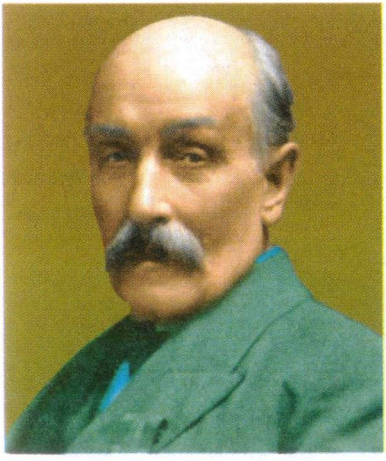
The Passys

Paul Édouard Passy, son of Frederic Passy, was a French linguist, and founder of the International Phonetic Association in 1886.

What makes William Randal Cremer a prominent figure among the Nobel Peace Prize recipients?

William Randal Cremer was awarded the Nobel Peace Prize in 1903 for his work with the international arbitration movement.

William Randal Cremer was born on 18th March 1828, in England. He grew up in poverty, and faced many hardships during his childhood.



William Randal Cremer

Later, he was elected as a Member of Parliament. Cremer advanced his passionate belief that peace was the only acceptable state for mankind, and arbitration the method by which it could be achieved.

It was the Franco-Prussian War, which led to Cremer's involvement with the peace movement. A public meeting of working men was held in London to oppose any intervention by Britain in the conflict.

A 'peace committee' was appointed of which Cremer was general secretary. This became the Workmen's Peace Association (WPA), which later became the International Arbitration League.

Cremer died on 22nd July, 1908.

What were the contributions of Bertha Suttner as a Nobel Peace Prize recipient?

Bertha Suttner, the first woman to be awarded the Peace Prize, was an Austrian-Bohemian pacifist and novelist. She became the second female Nobel laureate in 1905, after Marie Curie in 1903. She is also the first Austrian laureate.

Bertha Suttner was born on 9th June 1843, in Austrian Empire. She wrote one of the nineteenth century's most influential books, the anti-war novel 'Lay down Your Arms' (1889). The book was published in 37 editions and translated into 12 languages. The effect of the book was consequently so real that the impact made on the reading public was tremendous.

Bertha became an active leader in the peace movement. She corresponded regularly with Alfred Nobel, and is believed to have inspired his decision to establish a prize for peace in his will. In 1892, with A.H. Fried, she initiated the peace journal Die Waffen Nieder, remaining its editor till the end. She died on June 21st, 1914.

Bertha Suttner

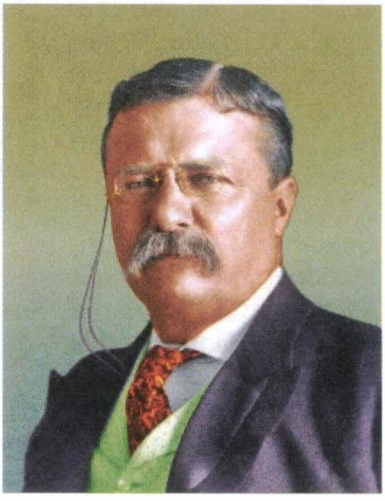
Why is Theodore Roosevelt exceptional among the recipients of the Nobel Peace Prize?

Theodore Roosevelt won the Nobel Peace Prize for his negotiations to end the Russo-Japanese War in the year 1906. But he was best remembered as the 26th President of the United States.

He was born in New York City on 27th October 1858 in one of the old Dutch families settled in America. At the age of 42, Roosevelt became the youngest man to assume the US presidency, following the assassination of President William McKinley. He won a second term in 1904.

As the President of the US, he played a prominent role in peace initiatives. In 1902, Roosevelt initiated Permanent Court of Arbitration, set up at The Hague, Netherlands. Roosevelt also played a prominent part in extending the use of arbitration to international problems.

Roosevelt was a prolific author; writing with passion on subjects ranging from foreign policy to the importance of the national park system.



Theodore Roosevelt

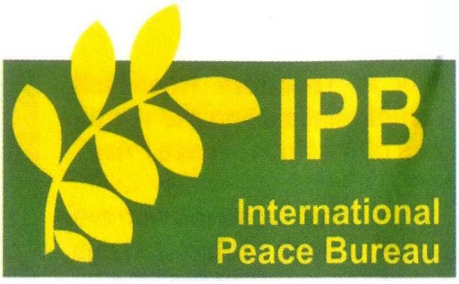
His prodigious literary output includes 26 books, over a thousand magazine articles, thousands of speeches and letters.

When did The International Peace Bureau (IPB) win Nobel Peace Prize?

After 1870, a popular peace movement grew up, and spread in Europe and the USA. They campaigned for disarmament and for the use of mediation and arbitration as the

solution of international disputes. In due course a need was felt for an office that could coordinate and direct these activities.

The International Peace Bureau (IPB), founded in 1891, was established under the initiative of Dane Fredrik Bajer. The central office set up in Geneva, Switzerland acted as the executive organ of the International Union of Peace Societies.



International Peace Bureau (IPB) - Logo

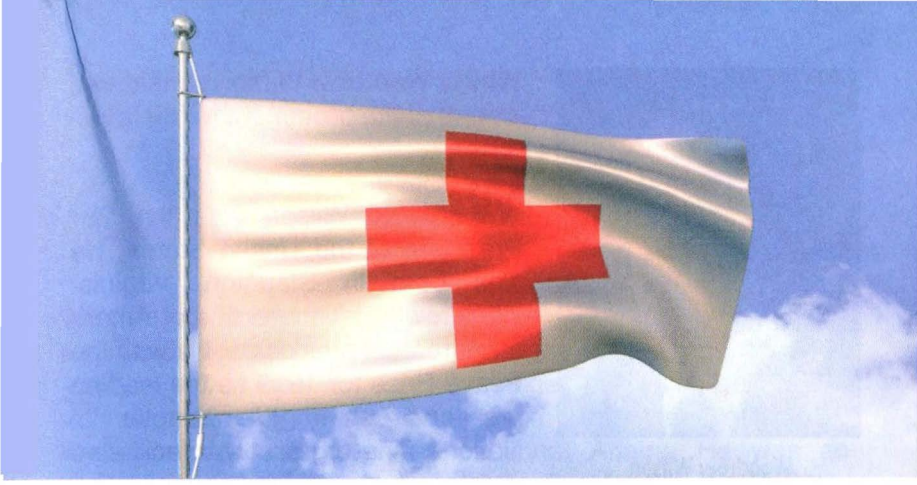
The Bureau's mission was to coordinate activities of various societies, and promote peaceful solutions to international conflicts. IPB is one of the world's oldest international peace federations. The organisation was awarded the Nobel Peace Prize in 1910 for acting as a link between peace societies of various countries. In 1913, Henri La Fontaine was also awarded the Prize for his service as the president of IPB. Significantly, eleven other Nobel Peace Prize laureates have been members of the International Peace Bureau.

Nobel Women

The Nobel Prize and Prize in Economic Sciences have been awarded to women 49 times between 1901 and 2017. Only one woman, Marie Curie, has been honoured twice, with the 1903 Nobel Prize in Physics, and the 1911 Nobel Prize in Chemistry.

What makes the Red Cross exceptional and extraordinary as a recipient of the Nobel Peace Prize?

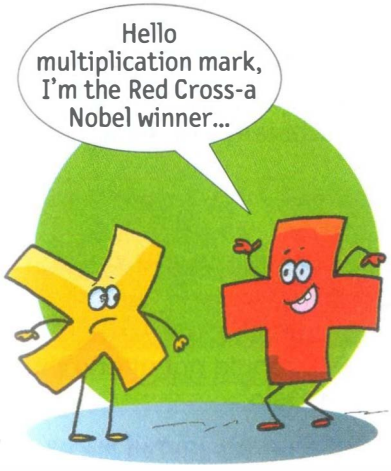
The International Committee of the Red Cross (ICRC) is based in Geneva. The International Committee of the Red Cross is part of the Interna-



Flag of the International Red Cross

tional Red Cross and Red Crescent Movement along with the International Federation of Red Cross and Red Crescent Societies (IFRC) and 190 National Societies.

The International Committee of the Red Cross was awarded the Nobel Peace Prize in 1917,

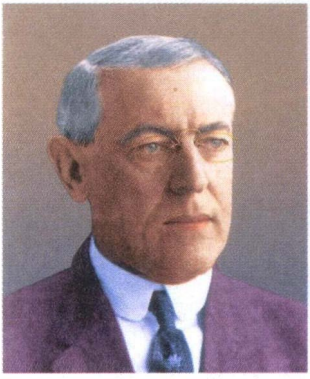


1944 and 1963 – on the third occasion jointly with the League of Red Cross Societies.

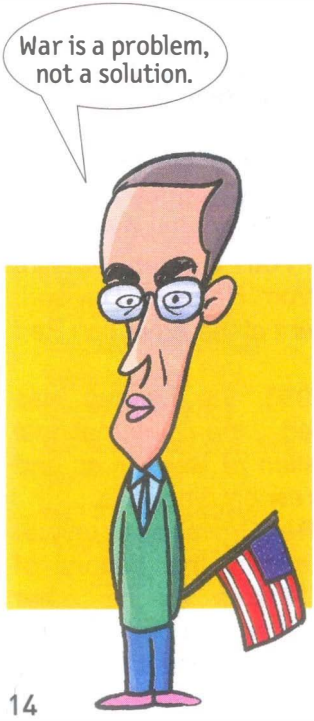
The League of Red Cross Societies was founded in 1919, the year after the end of World War I. The initiative came from Henry P. Davison, President of the American Red Cross.

In 1993, the League was renamed the International Federation of Red Cross and Red Crescent Societies.

The Red Cross has its unique signature in the history of Nobel Prizes as no other organisation has been awarded the peace prize this often.



Woodrow Wilson



Why is Woodrow Wilson considered as one of the prominent Nobel laureates?

Woodrow Wilson was the 28th President of the United States. He was born in Staunton, Virginia. Woodrow Wilson was one of America's greatest presidents. He won the Peace Prize for 1919 as the leading architect behind the League of Nations. The organisation facilitated greater security and cooperation among nations during the First World War.

Wilson became the President of the US in 1913. After the outbreak of war in 1914, it was Wilson's policy to keep the United States out. In the early days of World War I, Wilson was determined to maintain neutrality. Germany's unrestricted submarine offensive sank American ships, and in 1917, Wilson took the US into the war. His major failure was when the Senate declined to approve American acceptance of the League of Nations.

Nevertheless, the peace initiatives made by Woodrow Wilson won him the Nobel Peace Prize in the year 1919. Wilson, who had suffered a debilitating stroke in October 1919, could not attend the ceremony in Oslo.

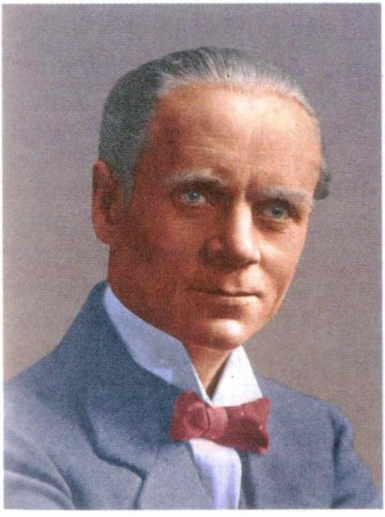
CURIOUS FACT

Political career

Wilson only had a little over two years of political experience when he became President of the United States.

What made Norman Angell a significant figure?

Sir Norman Angell was an English economist. He was one of the principal founders of the Union of Democratic Control (UDC). The UDC was a British pressure group formed during the First World War to press for a more responsive foreign policy.



Norman Angell

Angell served in the Council of the Royal Institute of International Affairs. He was an executive for the World Committee against War and Fascism. He was also a member of the executive committee of the League of Nations Union. From the mid-1930s, Angell actively campaigned for collective international opposition to the aggressive policies of Germany, Italy, and Japan.

He was born on 26th December 1872 in England. Angell won the Nobel Peace Prize in the year 1933 for his initiatives for international peace.

He invented 'The Money Game,' a series of card games using paper money to teach the fundamentals of currency and credit. A lifelong bachelor, he died at ninety-four in a home for the aged in Croydon, England.

What are the contributions of Arthur Henderson, the Nobel Laureate?

Arthur Henderson was born on 13th September 1863 in England. He disagreed with those politicians who believed Germany should be harshly treated after the First World War, and as a result of the nationalist fervour of the 1918 general election, he lost his seat.

Arthur Henderson

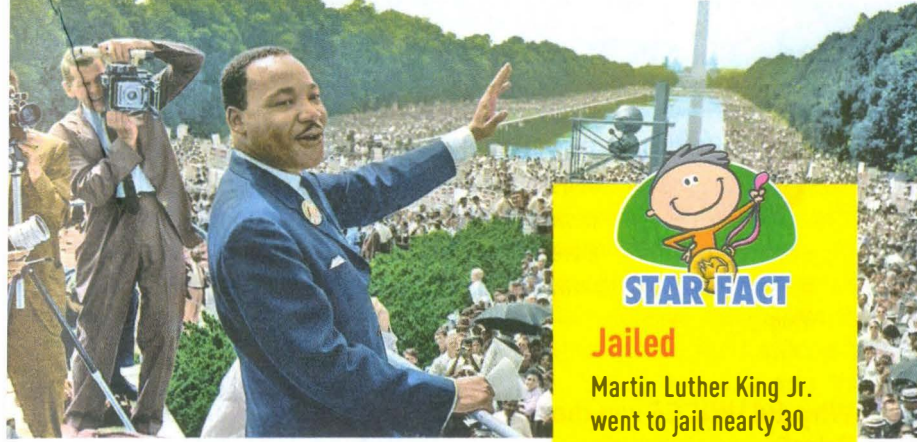
After the 1929 general election victory, Ramsay MacDonald appointed Henderson as his Foreign Secretary. In this post Henderson attempted to reduce political tensions in Europe. Diplomatic relations were re-established with the Soviet Union and Henderson gave his full support to the League of Nations by arguing for international arbitration, demilitarization, and collective security.

A strong believer in arbitration and industrial co-operation, Henderson opposed the formation of the General Federation of Trade Unions as he believed it would increase the frequency of industrial disputes.

In 1934, his work was recognised when he was awarded the Nobel Peace Prize. Arthur Henderson died on 20th October 1935, in London.

Why is Martin Luther King Jr. prominent among the Nobel laureates?

Martin Luther King Jr. is best known for his role in the advancement of civil rights using the tactics of non-violence and civil disobedience, and inspired by the non-violent activism of Mahatma Gandhi.



Martin Luther King, Jr.

In 1957, King Jr. was elected president of the Southern Christian Leadership Conference.

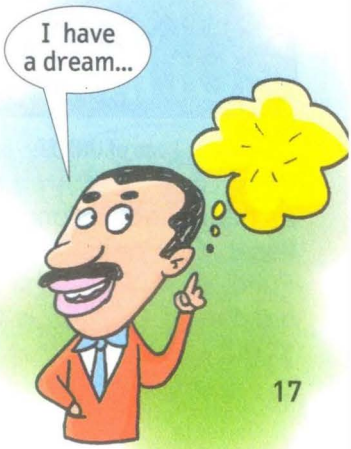
Later in 1963, King was one of the driving forces behind the March for Jobs and Freedom, more commonly known as the 'March on Washington', which drew a quarter-million people to the national mall.

In 1964, 35-year-old Martin Luther King Jr. won the Nobel Peace Prize. His acceptance speech in Oslo is thought by many to be among the most powerful remarks ever delivered at the event- "I believe that unarmed truth and unconditional love will have the final word in reality. This is why right temporarily defeated is stronger than evil triumphant."

He was assassinated on 4th April 1968.

Jailed

Martin Luther King Jr. went to jail nearly 30 times. He was arrested for acts of civil disobedience and on trumped-up charges, such as when he was jailed in Montgomery, Alabama, in 1956 for driving 30 miles per hour in a 25-mile-per-hour zone!



Peace from Norway!

The Peace Prize is both announced and handed out in Oslo, the Norwegian capital, according to the wishes of Alfred Nobel. When Alfred Nobel was alive, Norway and Sweden were united under one monarch. In 1905, Norway became an independent kingdom with its own king.

Why did UNICEF win the Nobel Prize?

UNICEF was established by the United Nations General Assembly on 11th December 1946. It was originally known as the United Nations International Children's Emergency Fund (UNICEF). The headquarters of UNICEF is in New York.

Logo of UNICEF

The Polish physician Ludwik Rajchman is widely regarded as the founder of UNICEF, and served as its first chairman from 1946.

UNICEF serves in 190 countries and territories to protect the rights of children. UNICEF has spent 70 years working to improve the lives of children and their families. As part of these efforts, UNICEF built thousands of health stations in the third world and launched projects to ensure school attendance for children and adolescents.

Nineteen years after its founding, UNICEF was awarded the Nobel Peace Prize on 26th October 1965. UNICEF serves as the primary source of distribution for essential items such as vaccines and nutritional supplements.

Logo of ILO

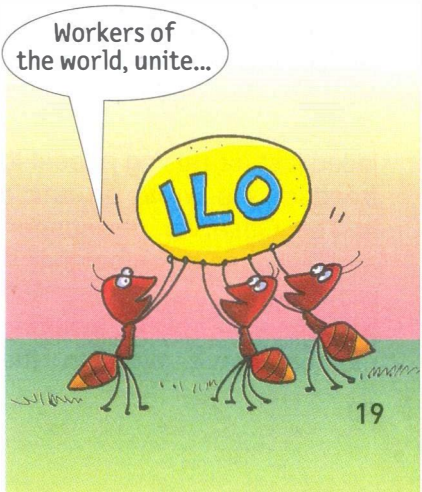
When did the ILO receive the Nobel Prize for Peace?

The International Labour Organization (ILO) is a United Nations agency that serves as a uniting force between governments, businesses and workers. The organisation was founded to emphasise the need for workers to enjoy conditions of freedom, equity, security and human dignity through their employment. The ILO was founded in 1919, in the wake of a destructive war.

The ILO received the Nobel Peace Prize in the year 1969 for improving peace among working classes, and dealing with labour problems such as international labour standards, social protection, and work opportunities for all. For nearly 100 years, the ILO has promoted international labour standards through its field offices in Africa, Latin America and the Caribbean, the Arab States, Asia, and the Pacific, and Europe and Central Asia.

The ILO has 187 member states. 186 of the 193 UN member states plus the Cook Islands are members of the ILO.

The ILO registers complaints against entities that are violating international rules. However, it does not impose sanctions on governments.



A rally organised by Amnesty International

What are the contributions by the Nobel Recipient Amnesty International?

Amnesty International is a London-based non-governmental organisation, which works for more than 7 million people who are victims of personal injustice.

Amnesty International was founded on July 1961. In 1961, British lawyer Peter Benenson was outraged when two Portuguese students were jailed just for raising a toast to freedom. He wrote an article in The Observer newspaper, and launched a campaign that provoked an incredible response. This inspiring moment gave birth to the Amnesty International, the worldwide human rights organisation.

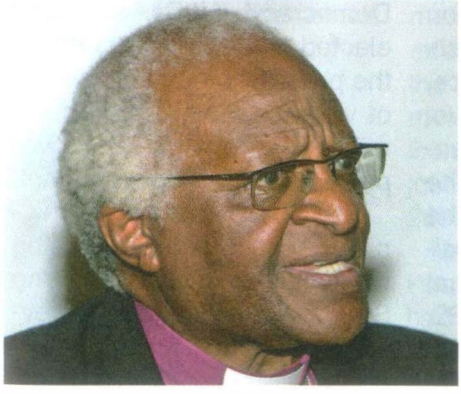
The organisation was awarded the 1977 Nobel Peace Prize for its campaign against torture. The organisation also won the United Nations Prize in the Field of Human Rights in 1978.

Amnesty International is independent from all forms of governments and political ideologies, and all economic and religious interests. They believe that the protection of individual rights is essential to the preservation of world peace and human dignity.

When did Desmond Tutu win the Nobel Peace Prize?

The 1984 Nobel Peace Prize awardee Desmond Tutu is a renowned South African Anglican cleric known for his staunch opposition to the policies of apartheid. Tutu was applauded by the Nobel Committee for his clear views and his fearless stance, characteristics which had made him a unifying symbol for all African freedom fighters.

Born in 1931 in South Africa, Desmond Tutu established a career in education before turning to theology. During the 1980s, he emerged as one of the most prominent anti-apartheid activists within South Africa. From 1976 to 1978, he served as the Bishop of Lesotho, and in 1978 became the first black General Secretary of the South African Council of Churches.



Desmond Tutu

The Peace Prize award made a big difference to Tutu's international standing, and was a helpful contribution to the struggle against apartheid. The broad media coverage made him a living symbol in the struggle for liberation, characterizing him as someone who articulated the sufferings of South Africa's oppressed masses.

CURIOUS FACT

Honoured

In 1992, Aung San Suu Kyi was awarded the Jawaharlal Nehru Award by the government of India.

Aung San Suu Kyi

When did Aung San Suu Kyi get Nobel Prize?

The Burmese Peace Prize laureate Aung San Suu Kyi is the daughter of the legendary liberation movement leader Aung San, who was assassinated during the transition period in July 1947, just six months before independence, when Ms Suu Kyi was only two.

Aung San Suu Kyi is Myanmar's icon of freedom. She won Nobel Peace Prize in the year 1991. She led the opposition to the military junta that had ruled Burma since 1962. Inspired by the non-violent campaigns of US civil rights leader Martin Luther King Jr., and India's Mahatma Gandhi, she organised rallies and travelled around the country, calling for peaceful democratic reform and free elections.

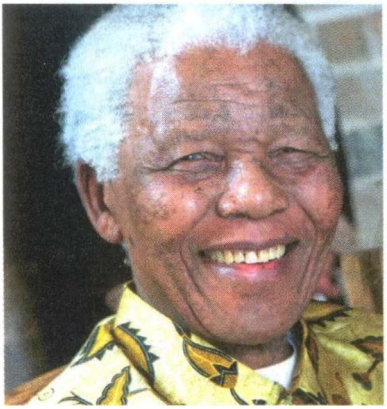
She was one of the founders of the National League for Democracy (NLD), and was elected secretary general of the party. She opposed all use of violence, and called on the military leaders to hand over power to a civilian government.

The Peace Prize had a significant impact in mobilising world opinion in favour of Aung San Suu Kyi's cause. However, she remained under house arrest for almost 15 years until her release on 13th November, 2010.

What makes Nelson Mandela prominent among Nobel Peace laureates?

Nelson Mandela is one of the most recognizable human rights symbols of the twentieth century. Mandela was a South African anti-apartheid revolutionary, politician, and philanthropist, who served as the President of South Africa from 1994 to 1999. He was the country's first black head of state, and the first elected president in a fully representative democratic election.

Mandela was born into the Madiba clan on 18th July 1918. Son of a chief, Nelson Mandela studied law and became one of South Africa's first black lawyers.



Nelson Mandela

Early in the 1950s, he was elected as leader of the youth wing of the African National Congress, a liberation movement. In 1962, he was arrested and sentenced to life imprisonment. Mandela became a powerful symbol of resistance for the rising anti-apartheid movement. Widely regarded as an icon of democracy and social justice, he received more than 260 honours.

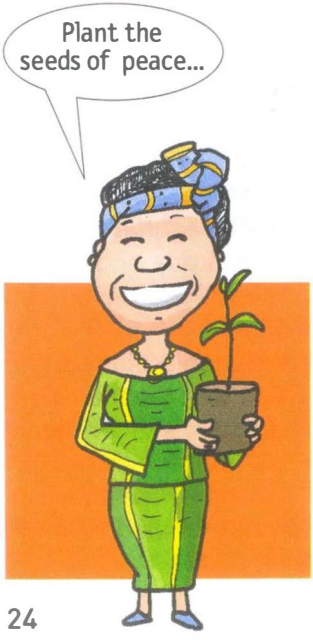
Nelson Mandela shared the Peace Prize with the man who had released him, Frederik Willem de Klerk, the then South African President in 1993. Mandela died on 5th December, 2013.

Wangari Maathai

STAR FACT

Books of an Activist

Wangari Maathai authored four books: 'The Green Belt Movement', 'Unbowed: A Memoir', 'The Challenge for Africa' and 'Replenishing the Earth'.



Why is Wangari Maathai a prominent Nobel laureate?

Wangari Maathai was an internationally renowned Kenyan politician and environmental activist. She served as the country's assistant minister of environment, natural resources, and wildlife. She was born on 1st April 1940, in Neyri in Kenya.

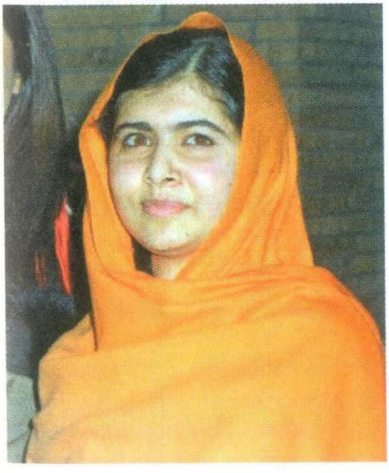
In 1977, Maathai founded the Green Belt Movement, an environmental non-governmental organisation focused on the planting of trees, environmental conservation, and women's rights. The movement was initiated to draw attention, and attend to environmental and domestic hardships faced by rural women in Kenya.

Through the Green Belt Movement Maathai assisted women in planting more than 20 million trees. The Green Belt Movement encouraged the women to work together to plant trees and receive a small monetary token for their work.

In 2004, Maathai became the first African woman to receive the Nobel Peace Prize. Maathai died on 25th September 2011.

Why is Malala Yousafzai a familiar name for all of us?

Malala Yousafzai was born on 12th July 1997, in Mingora in Swat Valley, Pakistan. She grew up witnessing the miserable conditions of girl children in her native village in north-west Pakistan, where the local Taliban had at times, banned girls from attending school.



Malala Yousafzai

From 2009, she started blogging for the BBC about her experiences during the Taliban's growing influence in her native region. As a young girl, Malala Yousafzai defied the Taliban in Pakistan and demanded that girls be allowed to receive an education, which resulted in the Taliban issuing a death threat against her.

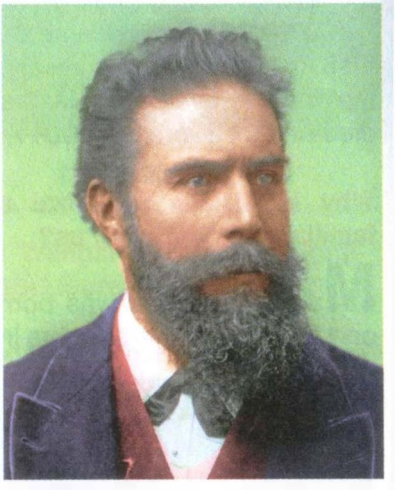
She was shot in the head by a Taliban gunman in 2012. She survived, but underwent several surgeries in the UK, where she lives today. In addition to her schooling, she continues her work for the right of girls to education.

She was nominated for Nobel Peace Prize in 2013. In 2014, she was nominated again and won, becoming the youngest person to receive the Nobel Peace Prize. She was announced as the co-recipient of the Nobel Peace Prize along with Kailash Satyarthi of India.

Why is Wilhelm Röntgen ever remembered in the history of Nobel Prizes?

The German physicist, Wilhelm Röntgen was the first Nobel recipient in Physics. He was awarded Nobel Prize in the year 1901 for his remarkable achievement in discovering X-rays.

Born on 27th March 1845, in Germany, Röntgen was the first person to systematically produce and detect electromagnetic radiation in a wavelength range today known as X-rays. Röntgen is considered the father of diagnostic radiology.

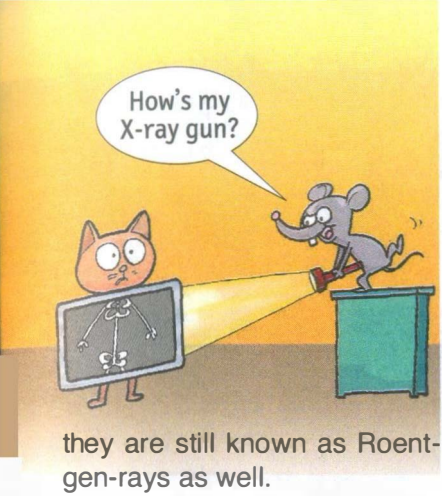


Wilhelm Röntgen

To highlight the unknown nature of his discovery, he called them X-rays, though

Roentgenium

Roentgenium, element number 111, which is also a radioactive element with multiple unstable isotopes, was named after Wilhelm Rontgen.



they are still known as Roentgen-rays as well.

He took the very first picture using X-rays of his wife Anna Bertha's hand. When she saw her skeleton she exclaimed "I have seen my death!"

What are the contributions of the Nobel laureate Marie Curie?

Marie Curie was the first woman to win a Nobel Prize, and the only person to win the award in two different fields -physics and chemistry. Marie Curie is remembered for her discovery of Radium and Polonium, and her huge contribution to the fight against cancer.

She was born in Warsaw in Poland on 7th November 1867. Marie married French physicist Pierre Curie on 26th July 1895.

During World War I, she developed mobile radiography units to provide X-ray services to field hospitals. Later, Marie and her husband Pierre decided to hunt for the new element they suspected might be present in pitchblende.

By the end of 1898 they announced the discovery of

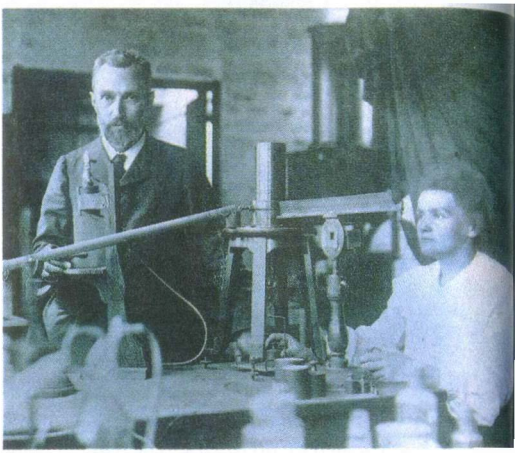
Marie Curie

two new chemical elements . The first element they discovered was Polonium, named by Marie to honour her homeland. The second element the couple discovered was Radium, which they named after the

Latin word for ray.

She shared the Nobel Prize with Pierre Curie and Henri Becquerel, the original discoverer of radioactivity.

Marie Curie died in 1934, aged 66, of aplastic anaemia from exposure to radiation in the course of her scientific research.



Pierre Curie and Marie

Why is it said that the 1903, Nobel Prize in Physics was a family affair for the Curies?

Pierre Curie was a French physicist, and one of the pioneers in radioactivity. He and his wife, Marie Curie, along with Henri Becquerel, were awarded the Nobel Prize in Physics in 1903, for their research on radiation.

Pierre was born on 15th May, 1859. He received his early education at home before entering the Faculty of Sciences at the Sorbonne. In his early studies on crystallography, together with his brother Jacques, Pierre discovered piezoelectric effects.

The marriage of Pierre and Marie Curie resulted in a scientific dynasty. Their children and grandchildren also became noted scientists. Pierre and Marie's daughter Irene and their son-in-law Frederic Joliot-Curie were also physicists involved in the study

of radioactivity, and each received Nobel prizes for their work as well. The Curies' other daughter Eve married Henry Richardson Labouisse, Jr., who received a Nobel Peace Prize on behalf of UNICEF in 1965.

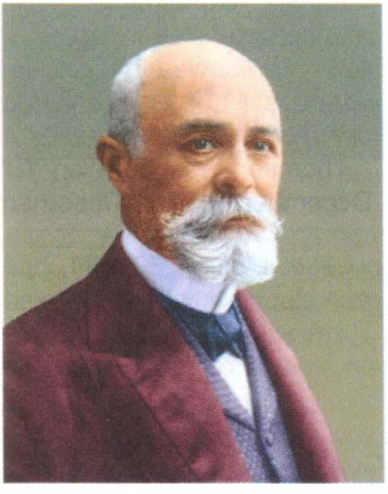
Pierre was killed in a street accident in Paris on 19th April 1906.

Who was Henry Becquerel?

Henri Becquerel was born in Paris on 15th December 1852, in a distinguished family of scholars and scientists. He won the Physics Nobel Prize in the year 1903, along with Marie and Pierre Curie.

He was the first person to discover evidence of radioactivity. He studied how uranium salts are affected by light. By accident, he discovered that uranium salts spontaneously emit a penetrating radiation that can be caught on a photographic plate. Further studies made it clear that this radiation was something new and not X-ray radiation. Thus he discovered a new phenomenon, radioactivity. The term radioactivity was coined by Marie Curie.

Becquerel was an esteemed member of the European scientific community. He also belonged to the Accademia dei Lincei and the Royal Academy of Berlin, amongst other scholarly societies. He was named an officer of the French Legion of Honour in 1900.



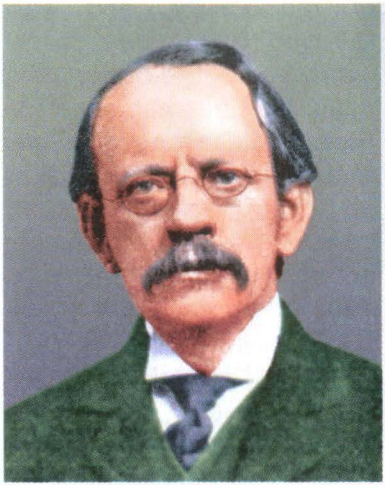
Henri Becquerel

Antoine Henri Becquerel died on 25th August, 1908. His work with radioactive materials, leaving him burned and scarred, may have contributed to his death. The SI unit for radioactivity, the becquerel (Bq), is named after him.

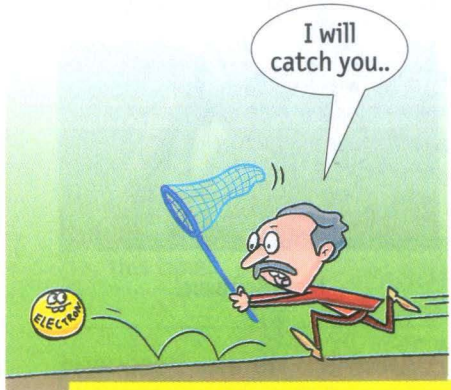
Why is J.J. Thomson a prominent Nobel Laureate?

J.J. Thomson was a Nobel Prize winning physicist whose research led to the discovery of electrons. In the 1890s, J.J. Thomson managed to estimate their magnitude by performing experiments with charged particles in gases. In 1897, he showed that cathode rays consist of 'electrons' that conduct electricity.

Thomson was born on 18th December 1856 in Cheetham Hill, England. In 1894, Thomson began studying cathode rays, which are glowing beams of light that follow an electrical discharge in a high-vacuum tube. Thomson determined that all matter is made up of tiny particles that are much smaller than atoms. He originally called these particles



J.J.Thomson



Cathode Rays

J.J. Thomson designed instruments to pas cathode rays through a magnetic field, and he was the first to determine the mass-to-charge ratio of cathode rays.

'corpuscles,' although they are now called electrons.

Thomson was elected Fellow of the Royal Society in 1884, and was its President from 1916-1920. He died at the age of 83, on 30th August 1940.

His ashes were buried in the Nave of Westminster Abbey, joining other science greats such as Isaac Newton, Lord Kelvin, Charles Darwin, Charles Lyell, and Ernest Rutherford.

Guglielmo Marconi

Why is Guglielmo Marconi considered as a prominent Nobel laureate?

Guglielmo Marconi sent the first wireless message over 100 years ago. Marconi became known for his work on long-distance radio transmission, and for his development of Marconi's law and a radio telegraph system.

Marconi won the 1909 Nobel Prize in Physics along with Karl Ferdinand Braun, in recognition of their contributions to the development of wireless telegraphy.

Guglielmo Marconi was born on 25th April 1874 in Bologna, Italy. In 1895, he succeeded in sending wireless signals over a distance of 2.4 kilometres.

In 1896, Marconi took his apparatus to England, and demonstrated his system successfully in London. He founded the Marconi Telegraph Company in 1899. He established wireless communication between France and England across the English Channel.

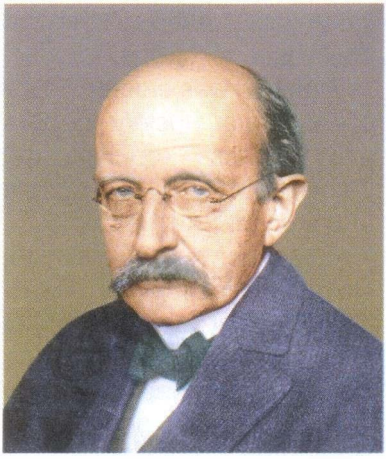
His experiment was significant, as it disproved the dominant belief of the Earth's curvature affecting transmission. Marconi died on 20th July, 1937.

What are the contributions of Max Planck?

Max Planck was born on 23rd April 1858 in Germany. Planck came from a traditional, intellectual family.

Planck's fame as a physicist rests primarily on his role as the originator of the quantum theory. Planck's theory, won him the Nobel Prize for Physics in 1918. He was elected to foreign membership of the Royal Society in 1926, and was awarded the Society's Copley Medal in 1928.

Max Planck led an unfortunate, tragic life after he was 50. In 1909, his first wife, Marie Merck died after 22 years of happy marriage, leaving Planck with two sons and twin daughters. The elder son Karl was killed in 1916. His two daughters Margarete and Emma died during childbirth.



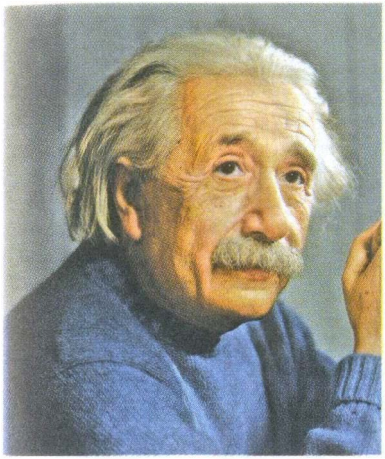
Max Planck

World War II brought further tragedy. Planck's house in Berlin was completely destroyed by bombs in 1944. His younger son Erwin died a horrible death. Max Planck died on 4th October 1947.

In 1948, the German scientific institution the Kaiser Wilhelm Society was renamed as the Max Planck Society, which now includes 83 institutions representing a wide range of scientific fields.

Home for Many!

Planck's home in Berlin was a social centre for local scientists, including Albert Einstein, Otto Hahn and Lise Meitner, and they enjoyed playing music together.



Albert Einstein

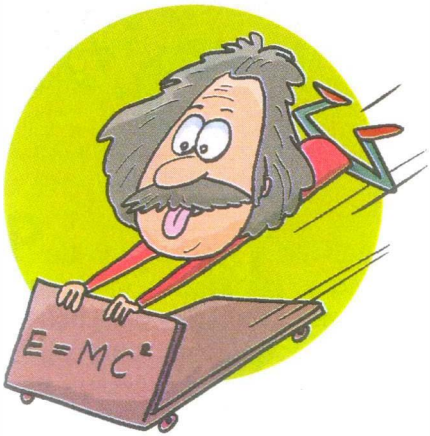
Why is Albert Einstein considered as the greatest among the Nobel laureates?

Albert Einstein, born on 14th March 1879, in Germany, was one of the most well-known and influential physicists of the 20th century.

The Nobel Prize awarding Institution, the Royal Swedish Academy of Sciences, decided to reserve the Nobel Prize in Physics in 1921, and therefore awarded no physics prize that year. According to the statutes, a reserved prize can be awarded the year after, and Albert Einstein was awarded the Nobel Prize for 1921 one year later, in 1922. Einstein was unable to attend the December 10th Nobel Prize Award Ceremony in Stockholm. He presented his Nobel speech on 11th July 1923, in Gothenburg.

Einstein developed the theory of relativity, one of the two pillars of modern physics. The second pillar is considered as the quantum theory. Einstein is best known by the general public for his mass-energy equivalence formula E=mc2, which is considered "the world's most famous equation".

He died on 18th April 1955, at Princeton, US.

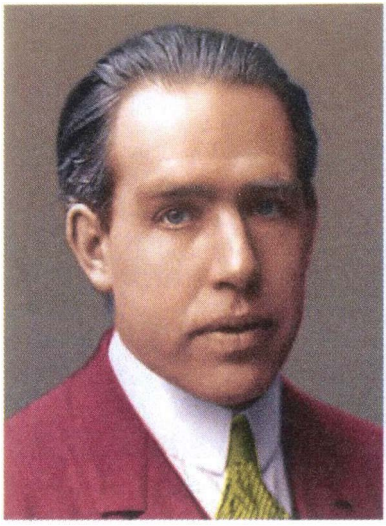


What makes Niels Bohr a prominent Nobel laureate?

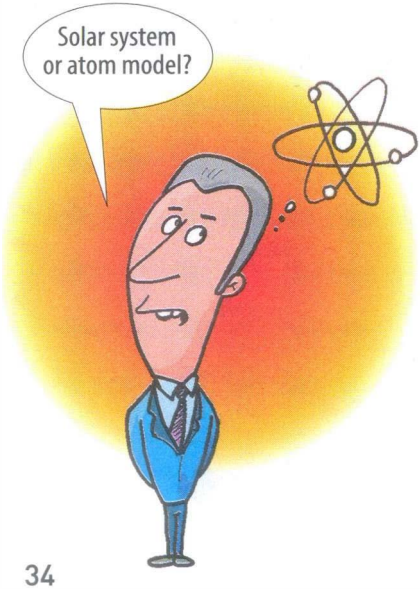
Niels Bohr was a Nobel prize-winning physicist and humanitarian who made revolutionary theories on atomic structures.

Bohr was born on 7th October 1885, in Copenhagen. He earned a doctorate in physics in 1911 from the Copenhagen University. The discoveries of the electron and radioactivity at the end of the 19th century led to different models for the structure of the atom.

In 1913, Bohr developed his model of atomic structure, known as the Bohr model, which depicts the atom as a small, positively-charged nucleus, surrounded by negatively-charged electrons that travel in circular orbits around the nucleus, similar in structure to the Solar System.



Niels Bohr



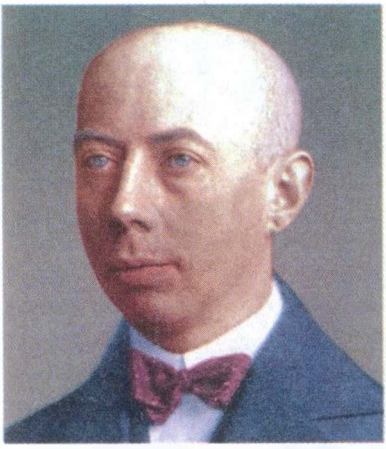
In 1921, Bohr founded the Institute of Theoretical Physics at the University of Copenhagen, now known as the Niels Bohr Institute. The element bohrium (Bh) was named after him. Niels Bohr died on 18th November, 1962.

What made Gustav Ludwig Hertz and James Franck's winning of the Nobel Prize unique?

German physicist Gustav Hertz, born on 22nd July 1887 in Hamburg, won the Nobel Prize in 1925, for the Franck-Hertz Experiment conducted in 1914 with James Franck, who shared the Nobel honour.

Gustav Ludwig Hertz and James Frank established the laws governing the impact of an electron upon an atom through their ground-breaking experiment.

After the publication of Niels Bohr's theory on the structure of the atom, Gustav Hertz and James Franck studied the movements of free electrons in various gases, and the impacts these electrons have on an atom's functions. They conducted an experiment in 1913 to verify Bohr's theory. A potential difference was applied to a tube containing a low-pressure gas. The potential difference increased the free electrons' mobility until, at a certain energy level; they jumped to a higher-energy orbit instead.



Gustav Ludwig Hertz

Hertz was a Member of the German Academy of Sciences in Berlin, Corresponding Member of the Göttingen Academy of Sciences, and a Foreign Member of the USSR Academy of Sciences. Gustav Hertz died in 1975 and James Franck in 1964.

What were the contributions of Paul Dirac?

Paul Dirac was a British theoretical physicist who is particularly known for his attempts to unify the theories of quantum mechanics, and the relativity theory.

Paul Dirac

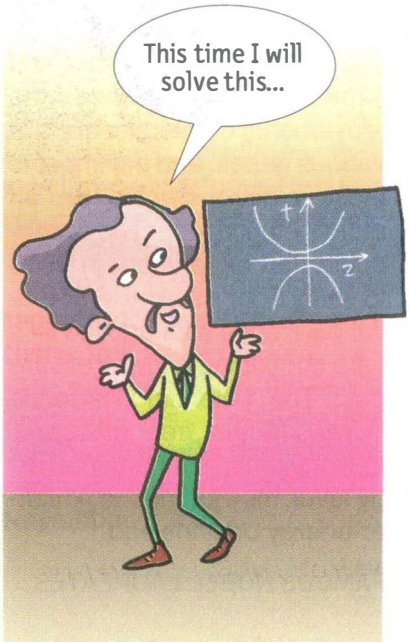
Paul Adrien Maurice Dirac was born on 8th August 1902 in Bristol, England. He became Lucasian Professor of Mathematics at Cambridge in 1932, a post he held for the next 37 years.

In 1933, he published a pioneering paper on Lagrangian quantum mechanics. The importance of Dirac's work lies essentially in his famous wave equation, which introduced special relativity into Erwin Schrodinger's equation. The equation is a mathematical formulation for studying quantum mechanical systems.

The Nobel Prize in Physics 1933 was awarded jointly to Erwin Schrodinger and Paul Dirac for the discovery of new productive forms of atomic theory.

He was also awarded the Royal Medal in 1939, the Copley Medal, and the Max Planck Medal both in 1952, among other honours, and was elected a Fellow of the Royal Society in 1930 and of the American Physical Society in 1948.

Dirac died on 20th October 1984, in Florida, US where he is buried.



CURIOUS FACT

Inspiration!

One of Schrodinger's many published works, 'What Is Life?' was the inspiration for Dr. James Watson and Francis Crick, both of whom credit Schrodinger's book with sparking their interest in cellular biology, specifically DNA.

Erwin Schrodinger

Why is Erwin Schrodinger considered as an important Nobel laureate?

Erwin Schrodinger is a renowned Austrian physicist who contributed to the wave theory of matter, and to other fundamentals of quantum mechanics, which formed the basis of wave mechanics. He formulated the wave equation.

He was born on 12th August 1887 in Austria. Schrodinger proposed an original interpretation of the physical meaning of the wave function. The Schrodinger equation, which he formulated to describe the quantum state of a system, is his biggest achievement.

In Niels Bohr's theory of the atom, electrons absorb and emit radiation of fixed wavelengths when jumping between fixed orbits around a nucleus.

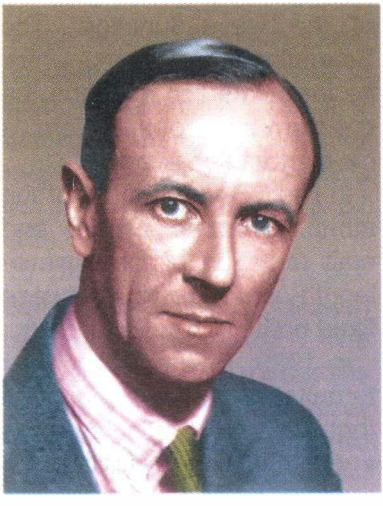
In 1926, Erwin Schrodinger formulated a wave equation that accurately calculated the energy levels of electrons in atoms.

Schrodinger died on 4th January, 1961.

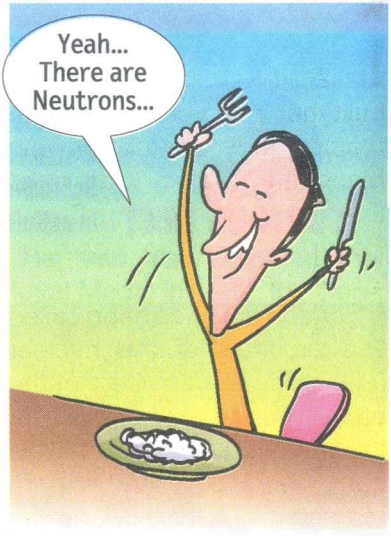
Why did James Chadwick become famous?

The Nobel Prize in Physics 1935 was awarded to James Chadwick for the discovery of the neutron. Chadwick was born in England on 20th October 1891. He attended Manchester High School prior to entering Manchester University in 1908. He graduated with first class honours in 1911.

When Herbert Becker and Walter Bothe directed alpha particles (helium nuclei) at beryllium in 1930, a strong, penetrating radiation was emitted. One hypothesis was that this could be high-energy electromagnetic radiation.



James Chadwick



In 1932, Chadwick made the fundamental discovery that it actually consisted of a neutral particle about the same mass as a proton, and proved the existence of neutrons. Ernest Rutherford had earlier proposed that such a particle might exist in atomic nuclei.

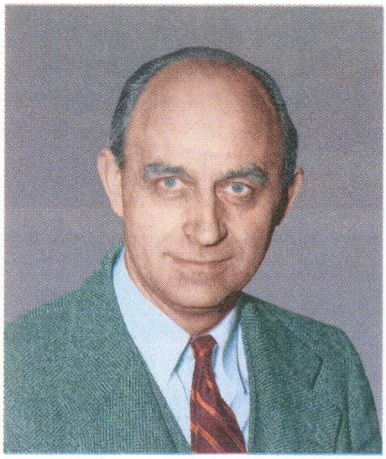
He was awarded the Hughes Medal of the Royal Society in 1932, and subsequently the Nobel Prize for Physics in 1935. James Chadwick died on 24th July, 1974.

Who was Enrico Fermi?

Italian physicist Enrico Fermi built the prototype of a nuclear reactor and worked on the Manhattan Project to develop the first atomic bomb. Enrico Fermi was born in Rome on 29th September, 1901.

Enrico Fermi has been called 'the architect of the nuclear age,' and 'the architect of the atomic bomb'. He was one of the very few physicists to excel both theoretically and experimentally.

In 1934, Fermi began his most important work with the atom, discovering that nuclear transformation could occur in nearly every element. One of the elements' atoms he split was uranium. This work led to the discovery of slowing down neutrons, which led to nuclear fission, and the production of new elements beyond the traditional Periodic Table.



Enrico Fermi

In 1938, Fermi was awarded the Nobel Prize for his work with artificial radioactivity produced by neutrons, and for nuclear reactions brought about by slow neutrons.

During the last years of his life Fermi occupied himself with the problem of the mysterious origin of cosmic rays. He died in Chicago on 28th November, 1954.

CURIOUS FACT

A Prisoner of War

When World War I started, James Chadwick was a prisoner at the Ruhleben Internment camp near Berlin.

NOBEL LAUREATES IN CHEMISTRY

Jacobus Henricus

Why is Jacobus Henricus van't Hoff a popular name in the history of the Nobel Prizes?

Jacobus Henricus van't Hoff was the first person to win a Nobel Prize in Chemistry. He was a Dutch physicist and organic chemist, who became the first to propose a three-dimensional model for the structure of simple carbon compounds. His pioneering work helped found the modern theory of chemical affinity, chemical equilibrium, and chemical thermodynamics.

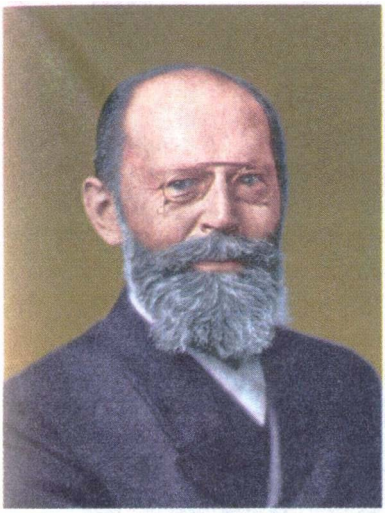
He is also widely considered as one of the founders of physical chemistry as the discipline is known today.

Jacobus Henricus was born in Netherlands, and earned his doctorate in Utrecht in 1874. In 1885, van't Hoff was appointed as a member of the Royal Netherlands Academy of Sciences.

Jacobus Henricus van't Hoff won the Nobel Prize in Chemistry in 1901. Jacobus Henricus van't Hoff died on 1st March, 1911.

What were the contributions of Hermann Louis Fischer that won him the Nobel Prize?

Hermann Emil Louis Fischer was a renowned German



Louis Fischer

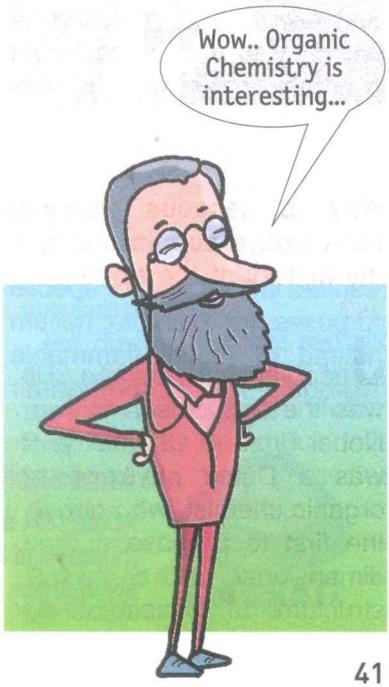
chemist of the 19th century, who did pioneering work in the field of organic chemistry. He was born on 9th October 1852, in Germany.

In 1874, he received his doctorate from the University of Strasbourg, under Adolph von Baeyer.

Fischer demonstrated the structure of biological compounds for instance sugars, proteins and purines. He also worked on the organic synthesis of glucose. This work showed that various substances, little known at that time, such as adenine, xanthine, caffeine all belonged to one homogeneous family and could be derived from one another.

This parent substance, which at first he regarded as being hypothetical, he called purine in 1884, and he synthesised it in 1898.

In 1902 he was awarded the Nobel Prize in Chemistry for his work on sugar and purine syntheses. Fischer died in Berlin on July 15th, 1919.

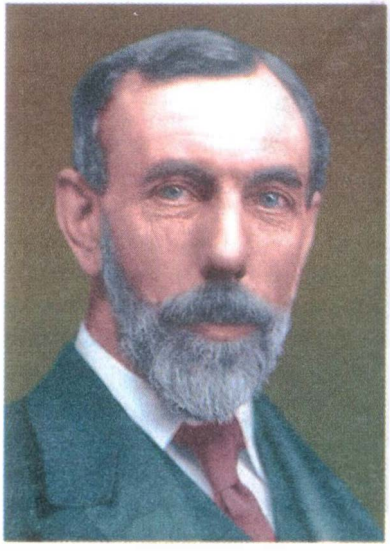


Why is it said that Sir William Ramsay is prominent among the Nobel Prize recipients?

Sir William Ramsay was a Scottish physical chemist who at the end of the 19th century, discovered four new elements. These were the noble gases, neon, argon, krypton, and xenon; they added a whole new group to the Periodic Table of the elements.

William Ramsay was born on 2nd October 1852, and received his basic education in Glasgow before traveling to Germany to earn a doctorate in organic chemistry. He was awarded the 1904 Nobel Prize for Chemistry in recognition of this achievement.

The remarkable inertness of the newly found elements resulted in their use for special purposes, for example, helium instead of highly flammable hydrogen for lighter-than-air craft and argon to conserve the filaments in light bulbs.



William Ramsay

Upon the outbreak of war in 1914, he became involved in efforts to secure the participation of scientific experts in the creation of government science policy. He died on 23rd July, 1916.

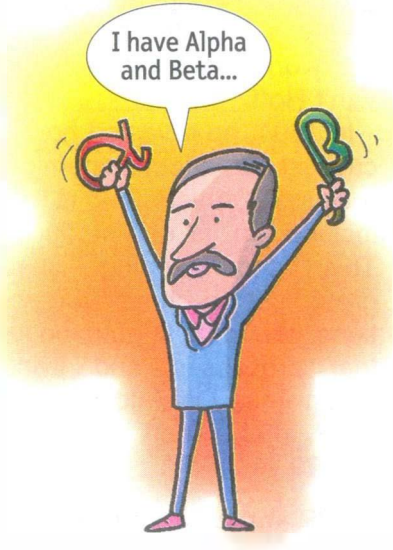
Announcing Argon

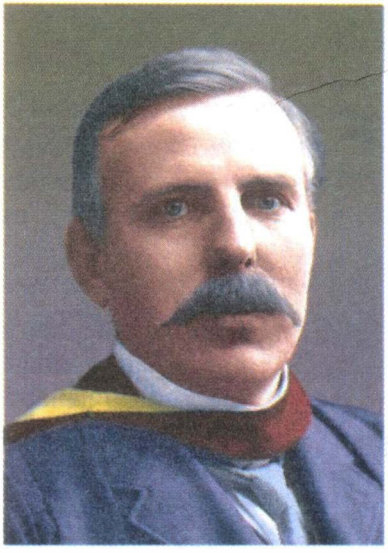
At the 1894 meeting of the British Association, Ramsay and Lord Rayleigh announced the discovery of Argon.

Why is Ernest Rutherford prominent among other Nobel recipients?

A chemist and physicist, Ernest Rutherford was the central figure in the study of radioactivity who led the exploration of nuclear physics. Ernest Rutherford was born on 30th August 1871, in New Zealand. He is considered be the greatest experimentalist since Michael Faraday.

After studying at the Cavendish Laboratory, Rutherford became a professor at McGill University in Canada. Being the first to split the atom, Rutherford was awarded the





Ernest Rutherford

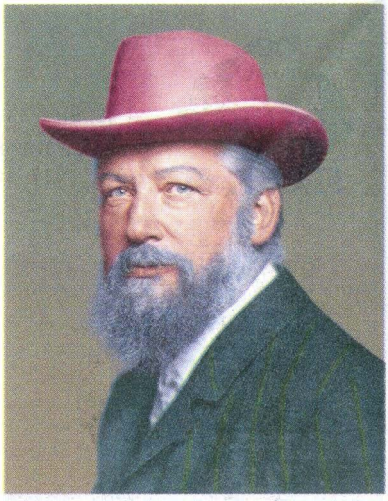
1908 Nobel Prize in Chemistry for his theory of atomic structure. Working with Frederick Soddy, Rutherford advanced the hypothesis that helium gas could be formed from radioactive substances.

He discovered that radioactive preparations gave rise to the formation of gases. Rutherford had an enormous influence in the field of nuclear physics and mentored scientists, including Chadwick, Niels Bohr, and Otto Hahn. He died on October 19th, 1937.

What made Wilhelm Ostwald a distinguished figure among Nobel laureates?

Friedrich Wilhelm Ostwald almost single-handedly established physical chemistry as an acknowledged academic discipline. In 1909, he was awarded the Nobel Prize in chemistry for his work on catalysis, chemical equilibria, and reaction velocities.

Ostwald, born on 2nd September 1853, was a German chemist. Ostwald, Jacobus Henricus van't Hoff, and Svante Arrhenius are credited with being the modern founders of the field of physical chemistry.



Wilhelm Ostwald

Ostwald went to Leipzig in 1887, where he carried out ground-breaking research on catalysis, while promoting the works of Arrhenius and van't Hoff.

In 1894, he revealed how a catalyst can affect a chemical reaction's speed, but is not included in its end-products. This understanding shed great light on chemical reactions, occurring in both industrial processes and living organisms. Ostwald died in 1932, after a short illness. He was 79 years old.

Chemistry Nobels

A hundred and nine Nobel Prizes in Chemistry have been awarded since 1901. It was not awarded in 1916, 1917, 1919, 1924, 1933, 1940, 1941 and 1942.

Otto Wallach

Who was Otto Wallach?

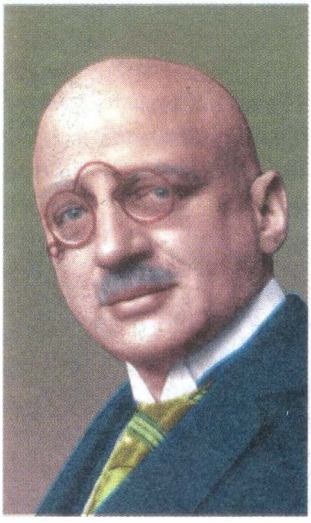
Otto Wallach was a German chemist born on 27th March, 1847. He received the 1910 Nobel Prize for his work on alicyclic compounds.

In 1865, he went to the University of Gottingen to study chemistry. In 1889, he was made the Director of the Chemical Institute at Gottingen. For many years, Wallach studied the structure and characters of alicyclic compounds, including hydrogen chloride.

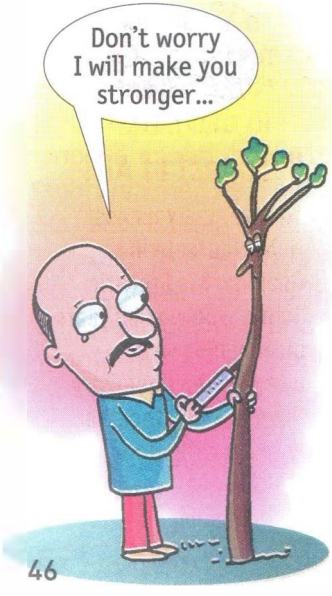
Wallach spent much of his research on the molecular structure of essential oils. He separated from the oils a group of fragrant materials that he called terpenes. He showed that many substances were mixtures of a small number of terpenes, and that terpenes can easily be altered and changes into each other. Otto Wallach's work became significant within the chemical industry, where essential oils are used in perfume and food.

In 1909, he published his results and conclusions in his book about the chemistry of Terpenes- 'Terpene und Campher'.

Otto Wallach died on 26th February 1931, at the age of 84.



Fritz Haber



What were the contributions of Fritz Haber?

Fritz Haber was a German physical chemist. He was the winner of the 1918 Nobel Prize in Chemistry for his successful work on nitrogen fixation.

Haber was born on 9th December 1868 in Poland. He became known for his Nobel Prize winning invention of the Haber–Bosch process, a method used in industry to synthesise ammonia from nitrogen gas and hydrogen gas.

This invention is of importance for the large-scale synthesis of fertilisers. The food production for half the world's current population depends on this method for producing nitrogen fertilisers.

His public life was entangled in controversy because of his role in the German poison gas programme during World War I. His name has been associated with the process of synthesizing ammonia.

Haber formulated a theory to explain that exposure to a low concentration of a poisonous gas for a long time often had the same effect as exposure to a high concentration for a short time. This became known as Haber's rule. He died on 29th January, 1934.

What made Hans Fischer prominent among the Nobel laureates?

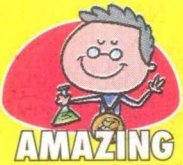
Hans Fischer was a famous German organic chemist. He was awarded the Nobel Prize in Chemistry for his research in the structure of heme, the red blood pigment, and chlorophyll, the green pigment in plants.

Hans Fischer was born on 27th July 1881, in Germany. Fischer studied haemoglobin, which is composed of the protein globin, and what is called the heme group. Haemoglobin possesses the unique property of forming a loose reversible combination with oxygen, so that oxygen taken up by it in the lungs can be given off in the tissues. In this loose combination the active part is heme, and heme combined with any other protein except globin, does not possess the property of giving up combined oxygen.

Fischer mapped the composition of the heme group and in 1929, he succeeded in artificially producing the substance.

He also studied other pigmented substances of biological importance, including chlorophyll, which plays a crucial role in plant photosynthesis. Hans Fischer died on 31st March, 1945.

Hans Fischer



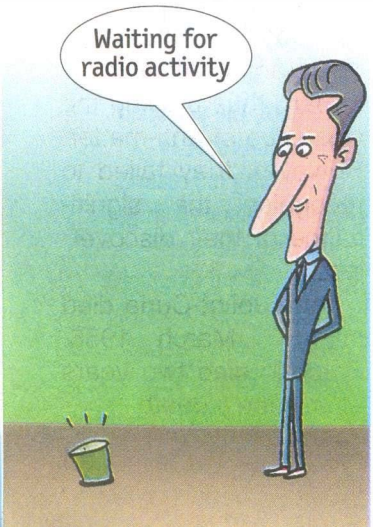
Youngest of All!

To date, the youngest Nobel laureate in Chemistry is Frederic Joliot, who was 35 years old when he was awarded the Chemistry Prize in 1935, together with his wife, Irene Joliot-Curie.

Frederic Joliot-Curie and Irene

Why is it said that Frederic Joliot-Curie holds a unique record in the history of the Nobel Prizes?

Frederic Joliot-Curie was a French physicist and Nobel laureate, who, along with his wife Irene Joliot-Curie, is credited with the discovery of artificial radioactivity. Frederic was born in France on 19th March, 1900. In 1925, he became an assistant to Marie Curie, at the Radium Institute and later got married to Curie's daughter Irène Curie.



In 1934, the husband and wife duo discovered artificial radioactivity. The discovery was a milestone in science. For the same, they bombarded boron, aluminium, and magnesium with alpha particles. On bombardment, they obtained radioactive isotopes of elements not ordinarily radioactive. Since these elements were not found naturally, they decomposed easily, emitting positive and negative electrons. In 1935, for their discovery of artificial radioactivity, Frederic and Irene Joliot-Curie were awarded the Nobel Prize for Chemistry.

It was after the discovery of the

artificially produced isotopes that the possibility of using them to follow chemical changes and physiological processes were realized. Frederic Joliot-Curie died on 14th August 1958.

Why is Irene Curie a prominent Nobel laureate?

Irene Joliot-Curie and her husband Frederic Joliot-Curie discovered artificial radioactivity- synthesising radioactive elements in the laboratory. Such elements are now used in tens of millions of medical procedures every year. Their use has saved millions of lives.

Irene and Marie Curie

Irene Joliot-Curie was born in Paris as the daughter of Pierre and Marie Curie. Irene worked with her mother to provide mobile X-ray units during World War I.

She later worked at the institute that her parents had founded. It was there that she conducted her Nobel Prize awarded work. This made the Curies- the family with the most Nobel laureates to date.

The Joliot-Curies missed winning the Nobel twice earlier, for the couple had found proof of the neutron, the missing component of atomic nuclei, as well as the positron, the electron's anti-particle counterpart, thus proving the existence of anti-matter. However, they failed to recognise the significance of their discoveries.

Irene Joliot-Curie died on 17th March 1956. Frederic died two years after Irene's death.

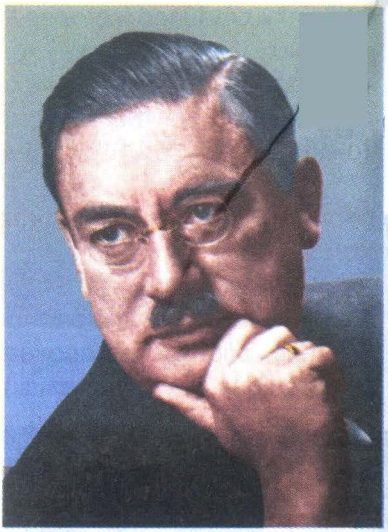
What were the contributions of Peter Debye?

Peter Debye was one of the leading physical chemists of his time, whose studies in the field of molecular structure helped mankind in developing greater understanding of the subject.

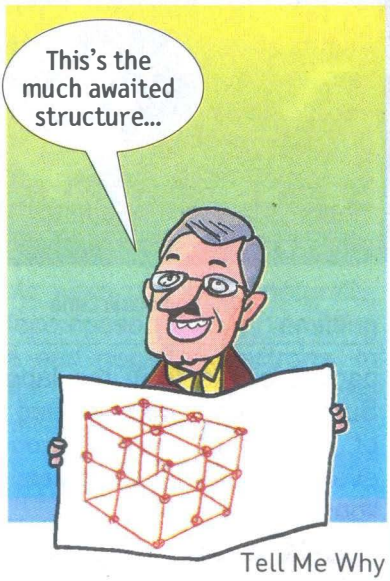
Debye was a Dutch-American physicist and physical chemist, and Nobel laureate in Chemistry. He was born on 24th March, 1884. He received a Ph.D. in physics from the University of Munich in 1908.

In 1912, Peter Debye developed a method to discern how a molecule is arranged in a structure to determine how electrical charges are distributed. This became important in the mapping of molecular structures.

At the same time, X-ray radiation was becoming an important tool for mapping crystalline structures, but Peter Debye also developed methods for using both X-rays and electron beams to map molecular structures in gases, for example. Peter Debye was honoured with the Nobel Prize in Chem-



Peter Debye



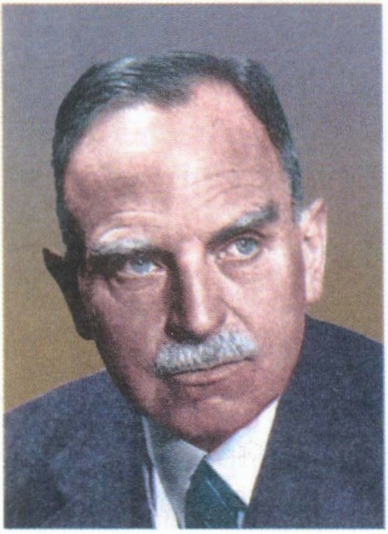
istry in 1936. The world saw the last of this eminent scientist on 2nd November 1966, when he succumbed to a heart attack.

Why is Otto Hahn a unique Nobel Prize recipient?

Otto Hahn was a German chemist and researcher. He pioneered the fields of radiochemistry and radioactivity, and is known as 'the father of nuclear chemistry'. He inadvertently discovered nuclear fission during an experiment in which the uranium atom split into barium.

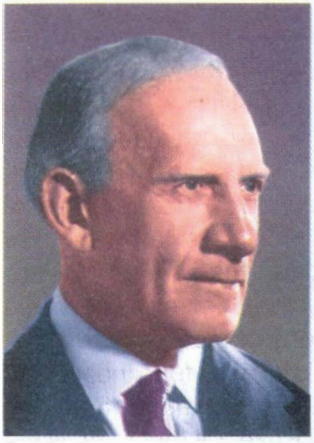
Otto Hahn was born on 8th March 1879, in Germany. He was awarded the Nobel Prize in Chemistry in 1944 for the discovery and the radiochemical proof of nuclear fission. Hahn crusaded against the use of nuclear weapons after World War II.

Otto Hahn received his Nobel Prize one year later, in 1945. During the selection process in 1944, the Nobel Committee for Chemistry decided that none of the year's nominations met the criteria as outlined in the will of Alfred Nobel. According to the Nobel Foundation's statutes, the Nobel Prize can in such a case be reserved until the following year, and this statute was then applied. Otto Hahn therefore, received his Nobel Prize for 1944 one year later, in 1945.



Otto Hahn

Though Hahn is best known for his discovery of nuclear fission, he also made several other important scientific contributions in the fields of chemistry and physics. He died on 28th July, 1968.



Robert Robinson

Wrath of Hitler

Two Nobel Laureates in Chemistry were forced by government authorities to decline the Nobel Prize. Adolf Hitler forbade two German Nobel Laureates from receiving the Nobel Prize- Richard Kuhn in 1938, and Adolf Butenandt in 1939.

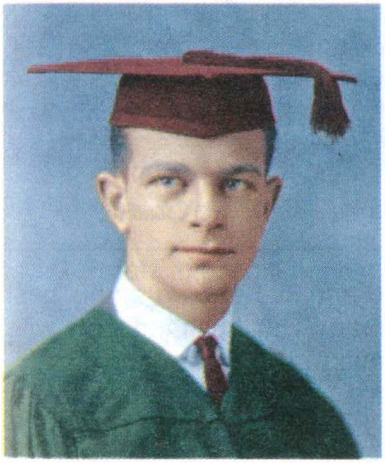
Who was Robert Robinson?

Sir Robert Robinson studied the chemical reactions involved in forming alkaloids, and won the Nobel Prize for Chemistry in 1947. He isolated tropinone in 1917, and described the structure of morphine in 1925, and strychnine in 1946.

Robert Robinson was born on 13th September, 1886 at Rufford in Derbyshire. He contributed greatly towards the definition of the arrangement of atoms within molecules of morphine, papaverine, narcotine etc. These discoveries led to the production of certain antimalarial drugs in future. He also invented the symbol for benzene having a circle in the middle whilst working at St. Andrews University in 1923.

During the World War II, Robinson worked on topics of national importance such as chemotherapy and chemical defence.

His closing years were marred by failing eyesight, and he became almost completely blind. Nevertheless, his intellect remained active, and he began an autobiography when he was 88-years-old, working at it even on the day he died, 8th February, 1975.



Linus Pauling

Why is Linus Pauling unique among the Nobel laureates?

Linus Pauling was one of the greatest scientists and humanitarians the world has seen. He was a much respected and beloved defender of civil liberties and health issues.

Pauling was born on 28th February 1901, in the US. Linus Pauling, has been awarded two undivided Nobel Prizes. In 1954, he was awarded the Nobel Prize in Chemistry. Eight years later, he was awarded the Nobel Peace Prize for his opposition to weapons of mass destruction.

He is one of four individuals to have won more than one Nobel Prize. Of these, he is the only person to be awarded two unshared Nobel Prizes, and one of the two legends to be awarded Nobel Prizes in different fields, the other being Marie Curie.

After first studying at Oregon State University in Corvallis, Oregon, Linus Pauling earned his Ph.D from the California Institute of Technology in Pasadena, with which he maintained ties for the rest of his career.

In 1954, he was awarded the Nobel Prize in Chemistry for his research into the nature of the chemical bond and its application in the structure of complex substances.

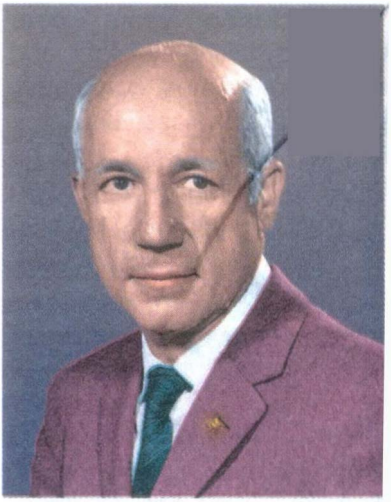
Linus Pauling died on 19th August 1994.

What were the contributions of Melvin Calvin?

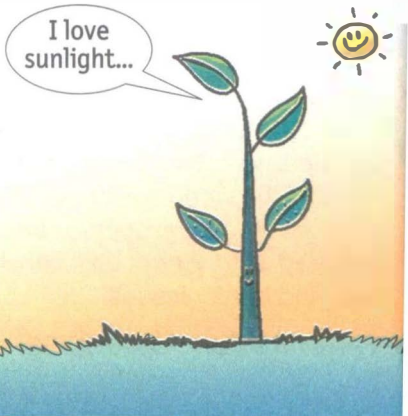
Melvin Calvin won the Nobel Prize for Chemistry in 1961 for his research on the carbon dioxide assimilation in plants. Through studies during the early 1950s, particularly of single-cell green algae, Calvin traced the path taken by carbon through different stages of photosynthesis, which was later named the Calvin cycle. For this, he made use of tools such as radioactive isotopes and chromatography. His findings included insight into the important role played by phosphorous compounds during the composition of carbohydrates.

Calvin was born on 8th April 1911, at St. Paul, Minnesota in the US. He is well-known for his leadership quality. During the latter part of the 1940s, and throughout the following decade, he led, and inspired an outstanding group of researchers.

In 1942, Calvin married Genevieve Jemtegaard, with later Nobel chemistry laureate Glenn T. Seaborg as his best man. The husband and wife duo worked on an interdisciplinary project to investigate the chemical factors in the Rh blood group system. He died on 8th January, 1997.



Melvin Calvin

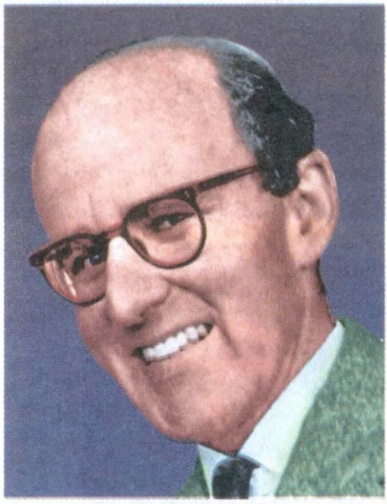


Who was Max Perutz?

Max Ferdinand Perutz was an Austrian-born British molecular biologist who was awarded the Nobel Prize in Chemistry in 1962, jointly with English biochemist John Kendrew, for their investigation on the structure of haemoglobin.

Max Perutz was born on 19th May 1914, in Vienna, Austria, where his father owned a textile factory. He took his Ph.D from Cavendish Laboratory at the University of Cambridge in 1936.

Max Perutz applied the most powerful device X-ray crystallography to analyse the structure of haemoglobin. During the 1930s, this method was used to map increasingly large and complex molecules. He began to map the structure of haemoglobin, for example - the protein that allows blood to transport energy-giving oxygen to the body's muscles.



Max Perutz

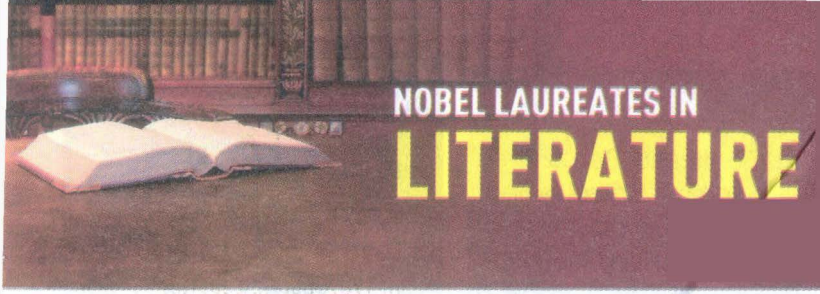
He received several awards including the Royal Medal in 1971, and the Copley Medal in 1979 from the Royal Society' of London.

On 6th February, 2002, he succumbed to cancer.

CURIOUS FACT

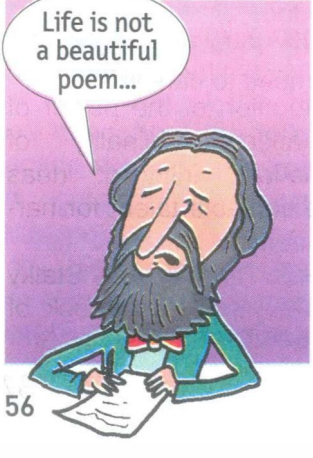
The medal reads...

The main inscription on one side of the medal for the physics, chemistry, medicine, and literature Nobel Prizes reads: "Inventas vitam iuvat excoluisse per artes".



NOBEL LAUREATES IN LITERATURE

Sully Prudhomme



Why is Sully Prudhomme ever remembered in the history of the Nobel prizes?

Sully Prudhomme, the French essayist and poet in 1901, had the honour of winning the first Nobel Prize in Literature.

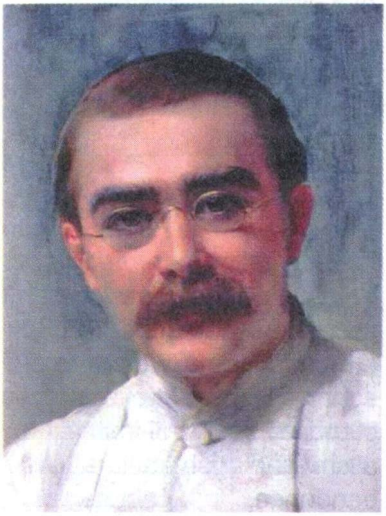
Born on the 16th March 1839, in Paris, little is recorded about his upbringing, but it is known that he was originally studying engineering but he changed streams and studied philosophy instead. He had already begun writing poetry as a student, and his debut came in 1865.

Much of his work demonstrated a sometimes sentimental, and certainly personal, style with a heavy leaning towards his interests in philosophy and all things scientific.

He received the Nobel Prize for Literature in special recognition of his poetic composition, which gives evidence of artistic perfection and a rare combination of the qualities of both heart and intellect. Sully Prudhomme died in1907.

Why is Rudyard Kipling prominent among the Nobel laureates?

Rudyard Kipling was an English writer and winner of the Nobel Prize in Literature. He is best known for his poems and stories set in India during the period of British imperial rule.



Rudyard Kipling

Kipling was born in Bombay, but educated in England. In 1882, aged sixteen, he returned to Lahore, where his parents then lived. He worked for Anglo-Indian newspapers there.

His literary career began with 'Departmental Ditties' published in 1886. His children's books are classics of children's literature. Rudyard Kipling wrote the most famous children's book in world history- 'The Jungle Book' in 1894.

In 1907, he was awarded the Nobel Prize for Literature in consideration of the power of observation, originality of imagination, virility of ideas and remarkable talent for narration.

His other works are 'Stalky and Co.', 'Kim' and 'Puck of Pook's Hill'. The 'Just So Sto-

First Woman

In 1909, Selma Lagerlof became the first woman to win the Nobel Prize in literature. One of her best known works is 'Jerusalem', which in 1996, was adapted into a movie by the same name.

ries' were originally written for his daughter Josephine, who died of pneumonia aged six.

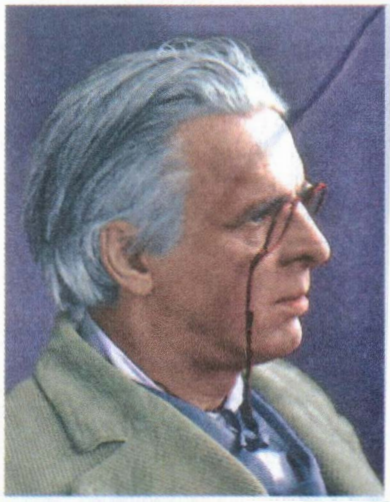
Rudyard Kipling died on 18th January, 1936.

Why is W.B Yeats considered as one of the prominent figures in modern poetry?

William Butler Yeats is widely considered to be one of the greatest poets of the 20th century. Born in Dublin, Ireland, on 13th June 1865, William Butler Yeats was the son of a well-known Irish painter, John Butler Yeats.

A pillar of both the Irish and British literary establishments, he helped in founding the Abbey Theatre, and in his later years, served as an Irish Senator for two terms. Though his works after 1910 was strongly influenced by Ezra Pound, becoming more modern in its imagery, W. B. Yeats was loyal to the traditional verse forms.

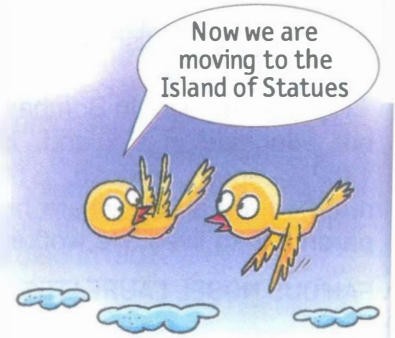
He won the Nobel Prize in the year 1923 for his always inspired poetry, which in a highly artistic form gives expression to the spirit of a whole nation. William Butler



William Butler Yeats

Yeats used the occasion of his acceptance lecture at the Royal Academy of Sweden to present himself as a standard-bearer of Irish nationalism and Irish cultural independence.

His first significant poem was 'The Island of Statues,' a fan-



tasy work that took Edmund Spenser and Shelley for its poetic models.

His first solo publication was the pamphlet 'Mosada: A Dramatic Poem'. Yeats died in 1939.

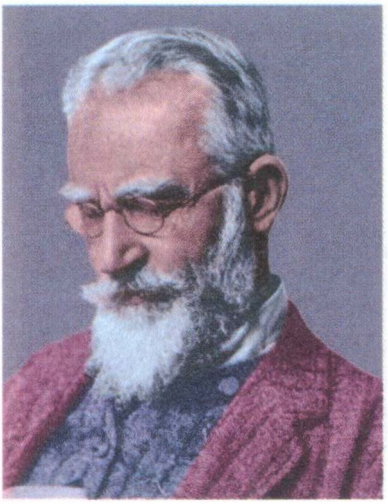
Why is George Bernard Shaw prominent among the Nobel laureates?

George Bernard Shaw was born on 26th July 1856, in Dublin, Ireland. He was a renowned playwright, critic and polemicist. When Shaw was 15-years-old, his mother left him and his father.

Later, Shaw's plays, including 'Misalliance', are filled with problematic parent-child relationships: with children who are brought up in isolation from their parents.

He wrote more than sixty plays, including major works such as 'Widowers' Houses,' 'Pygmalion,' and 'Candida'. George Bernard Shaw was awarded the Nobel Prize in literature in the year 1925.

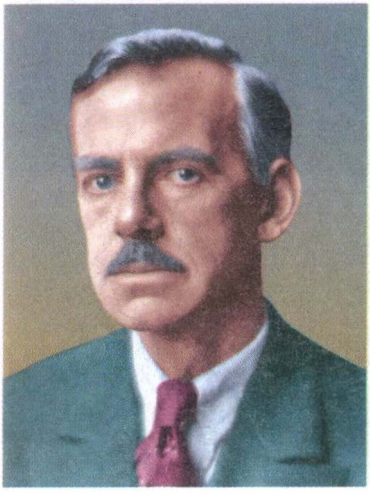
Over a decade later in 1938 he earned an Academy Award for the film adaptation of 'Pygmalion'. In the final decade of his life, he made fewer public statements, but continued to write prolifically until shortly before his death. Bernard Shaw refused all state honours including the Order of Merit in 1946.



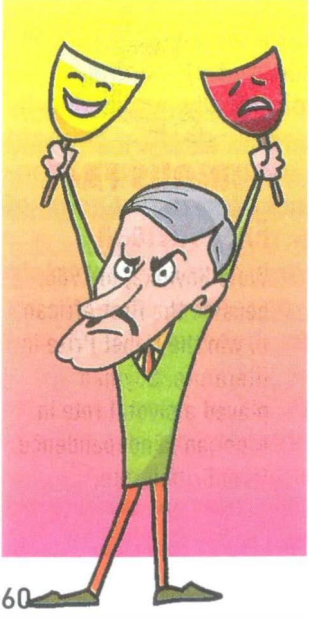
George Bernard Shaw

Bernard Shaw's complete works appeared in thirty-six volumes between 1930 and 1950.

Today he is considered as one of the greatest wits of English language. Film adaptations of his plays are considered classics.



Eugene O'Neill



What were the literary contributions of Eugene O'Neill?

Eugene O'Neill was one of the greatest playwrights in American history. He was born on 16th October, 1888, in New York City. He was the son of Mary Quinlan and the romantic actor James O'Neill. Eugene spent the first seven years of his life touring with his father's theatre company.

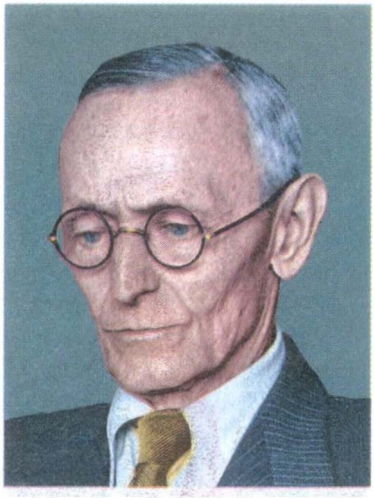
He began to write plays in 1913. He won the Nobel Prize for Literature in 1936. His masterpiece, 'Long Day's Journey into Night' is at the apex of a long string of great plays, including 'Beyond the Horizon,' 'Anna Christie,' 'Strange Interlude,' 'Ah! Wilderness,' 'Desire Under the Elms,' and 'The Iceman Cometh'.

The drama 'Long Day's Journey into Night' is often numbered on the short list of the finest American plays in the 20th century.

O'Neill's plays were among the first to include speeches in American vernacular, and involve characters on the fringes of society.

O'Neill's final years were spent estranged from much of the literary community and his family. Though he was awarded the Nobel Prize in

1936, most of his later works were not produced until after his death. He died on 27th November, 1953.



Hermann Hesse

What were the contributions of Hermann Hesse?

Hermann Karl Hesse is a German poet and novelist. Hesse won the Nobel Prize in Literature in 1946.

His best-known works include 'Demian,' 'Steppenwolf,' 'Siddhartha,' and 'The Glass Bead Game'. His works basically depicted the spirit and nature-the mind and the body.

Hesse was born on 2nd July 1877, in Germany. His grandfather Hermann Gundert developed the current grammar in Malayalam language, compiled a Malayalam-English dictionary, and also contributed to the work in translating the Bible to Malayalam.

After receiving the Nobel Prize in 1946, Hermann Hesse did not contribute much to literature. Hesse's works did not receive much acclaim till his death. It's only after his death that the world started appreciating his works.

Hermann Hesse died on 9th August, 1962, at the age of eighty-five.

CURIOUS FACT

First African

Wole Soyinka, in 1986, became the first African to win the Nobel Prize in literature. Soyinka played a pivotal role in Nigerian's independence from British rule.

T.S. Eliot

Who was T.S. Eliot?

T.S. Eliot, American-English author, was one of the most significant English poets of the twentieth century.

He was born in Missouri on 26th September 1888. He moved from his native United States to England in 1914 at the age of 25. In 1927, at the age of 39, he became a British citizen, renouncing his American citizenship.

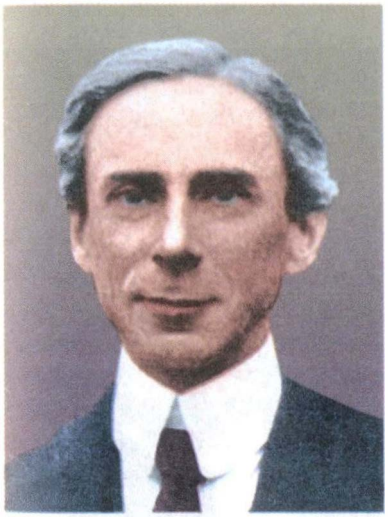
Eliot's writing style dealt with the bad feelings that World War I had created in European and American societies. It was in London that Eliot came under the influence of his contemporary Ezra Pound, who assisted in the publication of his work in a number of magazines, most notably 'The Love Song of J. Alfred Prufrock' in 'Poetry' in 1915.

Some of his other major works are 'The Wasteland,' 'The Hollow Men,' 'Ash Wednesday,' and 'Four Quartets'. He was also known for his seven plays, particularly 'Murder in the Cathedral,' and 'The Cocktail Party'. Among all his works, Eliot considered 'Four Quar-

Banned in Birthplace

In 2000, the Nobel Committee decided to award China's Gao Xingjian the Nobel Prize in Literature. Gao became the first Chinese recipient of the prize, though he had adopted French citizenship in 1998. Unfortunately, his works were banned in China.

tets', his best. He was awarded the Nobel Prize in 1948 for his outstanding contribution to poetry". He died in London on 4th January 1965.



Bertrand Russell

Who was Bertrand Russell?

As a philosopher, mathematician, educator, social critic and political activist, Bertrand Russell authored over 70 books and thousands of essays and letters. Bertrand Russell was born at Trellech on 18th May 1872 in the United Kingdom.

Russell was a prominent anti-war activist and he championed anti-imperialism. He went to prison for his pacifism during World War I. He won the Nobel Prize in Literature in 1950.

Born into the British aristocracy, and educated at Cambridge University, Russell gave away much of his inherited wealth. Instead of being sent to school in childhood, he was taught by governesses and tutors. In 1890 he went into residence at Trinity College, Cambridge.

His first books were 'German Social Democracy,' 'An Essay on the Foundations of Geometry,' and 'A Critical Exposition of the Philosophy of Leibniz'.

He was awarded the Nobel Prize for Literature in 1950. He was active as a politician and social critic until his death. Bertrand Russell died on 2nd February, 1970.

CURIOUS FACT

Tagore's Record Feat

Rabindranath Tagore was the first non-European recipient of the Nobel Prize. Tagore was awarded the 1913 Nobel Prize in Literature.

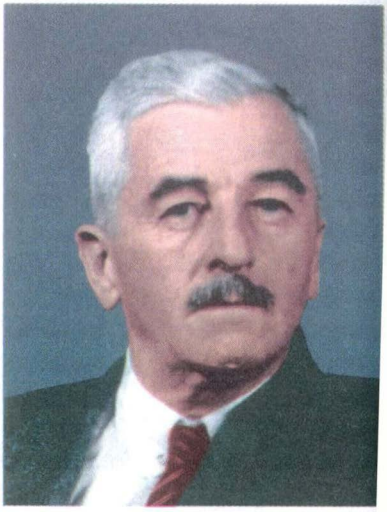
Who was William Faulkner?

William Faulkner was a major American writer of the twentieth century. His imaginative power, and the psychological depth of his works, ranks him as one of America's greatest novelists. He received the 1949 Nobel Prize in Literature for his powerful and artistically unique contribution to modern American literature.

He joined the Canadian, and later, the British, Royal Air Force during the First World War. During the early 1920s, Faulkner wrote poetry and fiction. He is primarily known for his novels and short stories.

Though Faulkner is one of the most celebrated writers in American literature generally, he was relatively unknown until he was awarded the 1949 Nobel Prize in Literature.

William Faulkner received his Nobel Prize one year later, in 1950. Faulkner donated his Nobel winnings, to establish a fund to support and encourage new fiction writers, eventually resulting in the PEN/Faulkner Award for Fiction. Faulkner died of heart attack on 6th July 1962, at the age of 64.

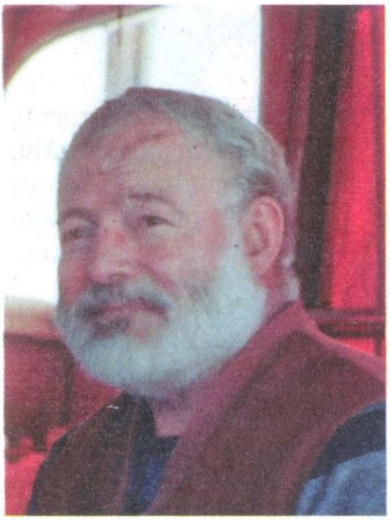


William Faulkner

Why is Ernest Hemingway a prominent figure among the Nobel laureates?

Ernest Miller Hemingway was an American novelist, short story writer, and journalist. He was awarded the Nobel Prize for Literature in 1954. He was one of the most celebrated and influential literary stylists of the twentieth century.

Ernest Hemingway was born in Oak Park, Illinois, on 21st July, 1899. He started his career as a writer in a newspaper office. After the United States entered the First World War, he joined a volunteer ambulance unit in the Italian army. Hemingway produced most of his work between the mid-1920s and the mid-1950s. Many of his works are considered classics of American literature.



Ernest Hemingway

His first important work was 'The Sun Also Rises'. Equally successful was 'A Farewell to Arms,' the study of an American ambulance officer's disillusionment in the war. In 1952, his world famous work, 'The Old Man and the Sea' was published. A short novel about an extraordinary battle between a tired old Cuban fisherman and a giant marlin, it was immediately hailed as a masterpiece and was awarded the Pulitzer Prize in 1953.

Hemingway died in Idaho, US in 1961.

Why is Albert Camus a prominent Nobel laureate?

Albert Camus was a French-Algerian playwright, novelist, and Nobel laureate. Camus was a representative of non-metropolitan French literature.

Camus was born on 7th November 1913, in French Algeria. He studied at the University of Algiers.

While living in occupied France during World War II, he became active in the Resistance movement. He was a very active theatre producer and playwright.

By mid-century, he became a renowned writer, and had a worldwide readership. His three most important novels are 'The Stranger,' 'The Plague,' and 'The Fall'. He authored two book-length philosophical essays 'The Myth of Sisyphus,' and 'The Rebel,' which received much appreciation too. He was often credited as being a proponent of existentialism.

Albert Camus

He was awarded the Nobel Prize in Literature in 1957 for his literary production, which illuminates the problems of the human conscience. Camus died on 4th January 1960, in a car accident.

Sudden Death

Albert Camus and his friend and publisher Michel Gallimard died in a car accident. Camus had an unused train ticket in his pocket. He had chosen to ride with Michel at the last minute.

Why was the life and work of Boris Pasternak, the Nobel laureate, unique?

The Nobel Prize in Literature 1958 was awarded to Boris Pasternak for his important achievement both in contemporary lyrical poetry and in the field of the great Russian epic tradition.

Boris Pasternak was born in Moscow on 10th February, 1890. His father was an artist and professor, and his mother was a concert pianist.

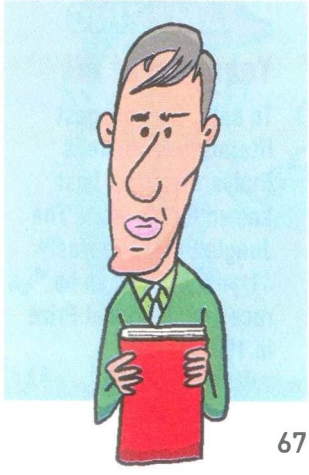
Pasternak was awarded the Nobel Prize for Literature in 1958, an event which both humiliated and enraged the Communist Party of the Soviet Union. His novel 'Doctor Zhivago' helped him win the Nobel Prize. He accepted the prize initially, but he was forced by the authorities of his country to decline the prize. Later, his descendants were to accept it in his name in 1988.

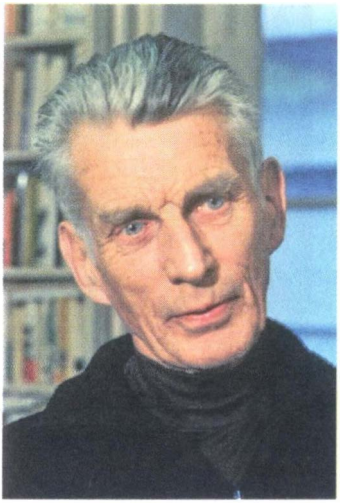
His most important works are 'Twin in the Clouds,' 'Over the Barriers,' 'On Early Trains,' 'Poems,' 'Themes and Variations,' 'Safe Conduct,' 'Second Birth,' and 'Doctor Zhivago'. Pasternak's translations of stage plays by Goethe, Schiller, Calderon de la Barca and Shakespeare remain very popular with Russian audiences.

Boris Pasternak

Outside Russia, Pasternak is best known as the author of 'Doctor Zhivago'.

Boris Pasternak died on 30th May, 1960.





Samuel Beckett

Youngest of All

To date, the youngest literature laureate is Rudyard Kipling, best known for his work 'The Jungle Book'. He was 41-years-old when he received the Nobel Prize in 1907.

Why is Samuel Beckett considered a legendary figure?

Samuel Beckett was a renowned Irish author, critic, playwright, and winner of the Nobel Prize for Literature in 1969. He wrote in both French and English. He was born on a Good Friday on 13th April 1906, in Ireland.

In 1928, Samuel Beckett moved to Paris, and the city quickly won his heart. During World War II, Beckett was living in Paris. He joined the underground movement, and fought for the resistance until 1942. He was forced to flee with his French-born wife to the unoccupied zone. In 1945, after the liberation, he began his most prolific period as a writer.

He authored 'Eleutheria,' 'Waiting for Godot,' 'Endgame,' the novels 'Molloy,' 'Malone Dies,' 'The Unnameable,' and 'Mercier and Camier,' two books of short stories, and a book of criticism. His experiences during World War II - insecurity, exile, hunger - came to shape his writing.

In his most famous work, 'Waiting for Godot', he examines the most basic foundations of our lives with strikingly dark humour. Beckett died on 22nd December, 1989.

Why is Pablo Neruda a great poet?

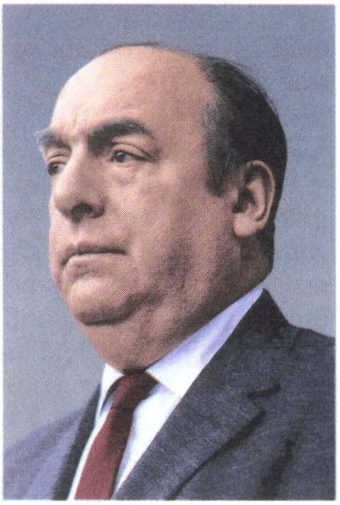
Born Ricardo Eliecer Neftali Reyes Basoalto in the town of Parral in Southern Chile on 12th July 1904, Pablo Neruda led a life charged with poetic and political activity. Neruda was the most important Latin American poet of the 20th century. He won Nobel Prize in Literature in the year 1971.

His mother Rosa Basoalto died within two month of Neruda's birth. His father always discouraged him from writing. This became the main reason why the young poet began to publish under the pseudonym Pablo Neruda.

In 1923, he sold all of his possessions to finance the publication of his first book, 'Book of Twilight'. When he was just 20-years-old, his poetry collection 'Twenty Love Poems and a Song of Despair' made him a household name in Latin America.

In 1927, Neruda began his long career as a diplomat in the Latin American tradition of honouring poets with diplomatic assignments. He served as Ambassador to France.

He died on 23rd September 1973.



Pablo Neruda

Why is Gabriel Garcia Marquez prominent among the Nobel laureates?

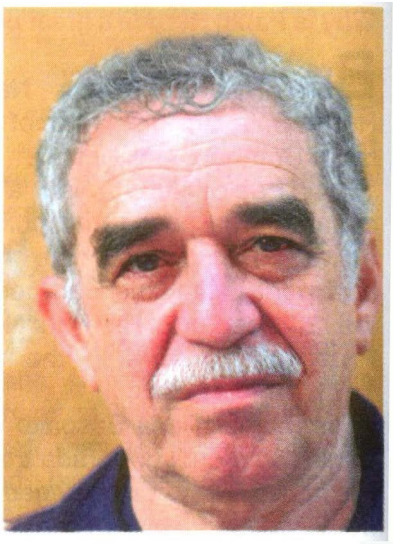
Gabriel Garcia Marquez is a Latin American writer who gained worldwide readership with his brand of 'magical realism'. He illuminated the unique style of conventional storytelling with vivid fantasy.

Marquez was born in 1927 in the small town of Aracataca, in Colombia. He is indisputably one of the greatest writers of the 20th century.

He was awarded the 1972 Neustadt International Prize for Literature, and the 1982 Nobel Prize in literature. Garcia Marquez began his career as a journalist, and became a renowned one too.

Marquez was just 19-years-old when his first novel 'Leaf Storm' was published. His most famous works are 'One Hundred Years of Solitude,' 'The Autumn of the Patriarch,' and 'Love in the Time of Cholera'. Among them, 'One Hundred Years of Solitude,' is considered as a masterpiece of magical realism.

He died on 17th April, 2014 in Mexico.



Gabriel Garcia Marquez

A Famous Refusal!

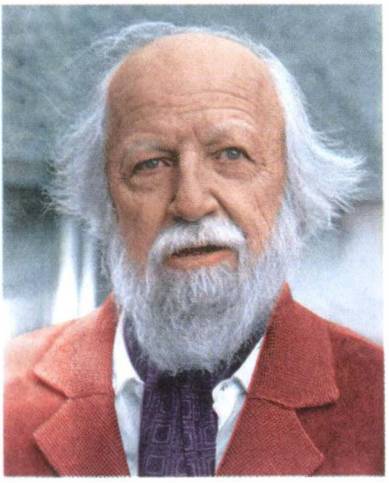
Jean-Paul Sartre was awarded the 1964 Nobel Prize in Literature, which he refused to accept, saying that he always declined official honours.

What made William Golding a popular Nobel laureate?

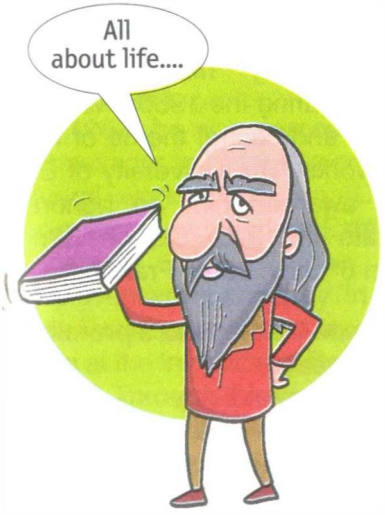
Sir William Golding, was born on September 19th, 1911. He won the Nobel Prize for literature for his parables of the human condition in 1983. He attracted a cult of followers, especially among the youth of the post-World War II generation.

Golding's first published novel was 'Lord of the Flies,' the story of a group of schoolboys isolated on a coral island who revert to savagery.

'The Inheritors,' set in the last days of Neanderthal man, is another story of the essential violence and depravity of human nature.



William Golding

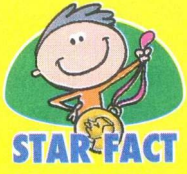


He was also awarded the Booker Prize for fiction in 1980 for his novel 'Rites of Passage,' the first book in what became his sea trilogy, 'To the Ends of the Earth'.

His later works include 'Close Quarters,' 'The Hot Gates,' 'The Brass Butterfly,' 'A Moving Target,' and 'Fire Down Below'.

William Golding was knighted in 1988. He was a fellow of the Royal Society of Literature. Golding died on 19th June, 1993 in England.

Claude Simon



STAR FACT

Oldest of All!

The oldest Nobel laureate in Literature to date is Doris Lessing, who was 88-years-old when she was awarded the prize in 2007.

● *Sneha Rao*

Who was Claude Simon?

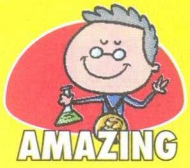
The famous French novelist and critic Claude Simon's major novels include 'The Wind,' 'The Grass,' and 'The Flanders Road.' He received the Nobel Prize for Literature in 1985.

Claude Simon was born on 10th October 1913 in Madagascar. The son of a cavalry officer who was killed in World War I, Simon was raised by his mother in Perpignan, France. After secondary school at College Stanislas in Paris, and brief sojourns at Oxford and Cambridge, he took courses in painting at the Andre Lhote Academy. He then travelled extensively through Spain, Germany, the Soviet Union, Italy and Greece. Later, he fought in World War II, and later earned a living producing wine.

Simon is often identified with the French literary movement that emerged during the 1950s. War is a constant and central theme of most of his works. The University of East Anglia awarded him an honorary doctorate in 1973. Claude Simon died on 6th July, 2005, France.

What made Octavio Paz a prominent Nobel laureate?

The Mexican poet and diplomat Octavio Paz was born on 31st March



Paz Words

Octavio Paz wrote the book, 'In Light of India', detailing the six years he spent in the country, the cultural change and its influence on him. It also explains how this stay helped him understand how similar Mexico and India are.

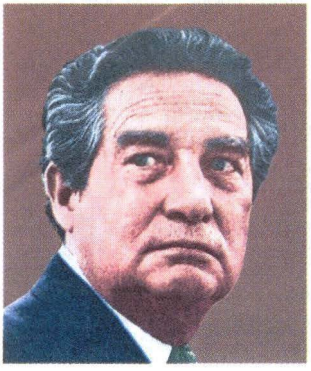
1914, in Mexico City into a prominent family with ties to Mexico's political, cultural, and military elite. For his body of work, he was awarded the 1990 Nobel Prize in Literature.

Under the encouragement of Pablo Neruda, Paz began his poetic career in his teens. In 1933, he published his first book of poems, 'Luna Silvestre'.

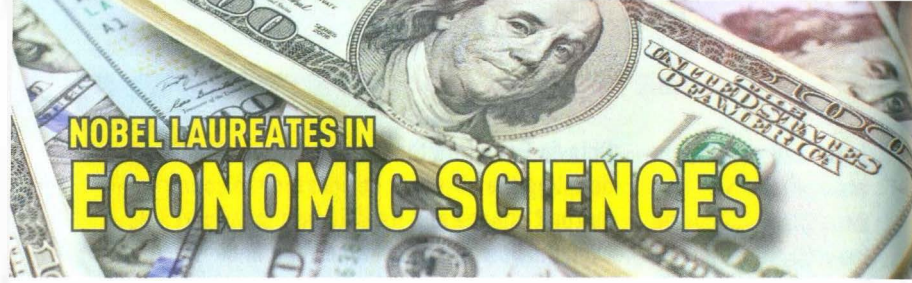
A prolific author and poet, Paz published scores of beyond the borders works during his lifetime, many of which have been translated into other languages.

In 1962, he was named Mexico's ambassador to India. Paz completed several works, including 'O Mono Gramático,' and 'Ladera Este,' while in India.

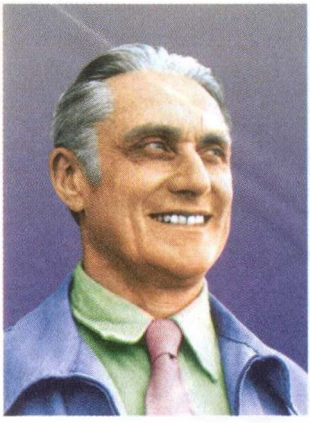
He even wrote an essay 'In Light of India,' which was based on a lecture given at the invitation of Rajiv Gandhi in 1985.Through this work, he established how similar India and Mexico are. He died on 19th April, 1998.



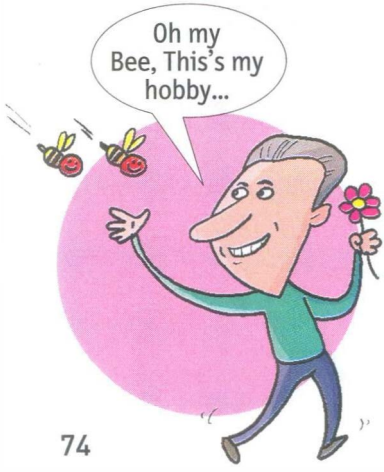
Octavio Paz



NOBEL LAUREATES IN ECONOMIC SCIENCES



Ragnar Frisch



Who was Ragnar Frisch?

Ragnar Frisch was a Norwegian economist, and joint winner of the very first Nobel Prize in Economic Sciences, along with Jan Tinbergen, for his research in econometrics.

Frisch was born in Oslo on 3rd March 1895, as the son of a gold smith. He began his career as a gold and silver smith apprentice in order to work in the family business. He later became interested in economics, and studied the subject at Royal Frederick University.

After graduating in 1919, he studied economics and mathematics abroad for several years. He received his Ph.D in mathematical statistics from the University of Oslo in 1926.

In 1969, Ragnar Frisch, along with Dutch economist Jan Tinbergen, received the Nobel Prize for economics for having developed and applied dynamic models for the analysis of economic processes.

Frisch coined the term 'econometrics' for studies in which he used sta-

tistical methods to describe economic systems. In 1933, he presented the first mathematical economic model that could describe fluctuations in the business cycle. He died in 1973.

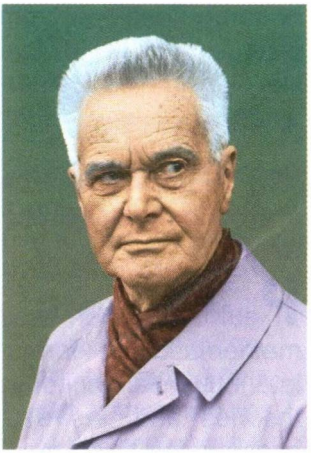
Why is Jan Tinbergen prominent among Nobel laureates?

The Dutch economist Jan Tinbergen was a pioneer in the development of econometrics, linking statistics and mathematics to economic theory. He shared the 1969 Nobel Prize in Economics with Ragnar Frisch.

Tinbergen was born on 12th April 1903, in The Netherlands. During the 1930s, he developed the first macroeconomic model. He is widely considered to be one of the most influential economists of the 20th century.

He was educated at the University of Leiden, where he earned a doctoral degree in physics. He took part in discussions with his professors, including Albert Einstein. His interests shifted to economics, which he thought would allow him to contribute more to society.

Tinbergen was a founding trustee of Economists for Peace and Security. In 1945, he founded the Bureau for Economic Policy Analysis (CPB). He was its first chairman.



Jan Tinbergen

During his lifetime, Tinbergen received 20

STAR FACT

A Family Tradition!

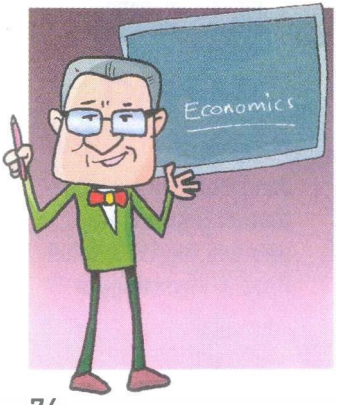
Jan Tinbergen's younger brother Nikolaas was awarded the 1973 Nobel Prize in Physiology or Medicine.

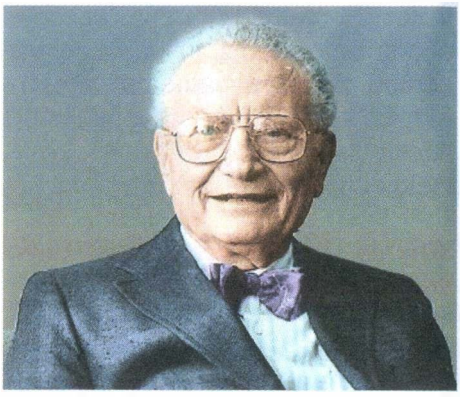
honorary degrees from institutions worldwide. He died in The Netherlands on 9th June, 1994.

Why is Paul Samuelson a prominent Nobel laureate?

Paul Samuelson used mathematics to formulate influential economic theories and, in 1970, became the first American to win the Nobel Prize in Economic Sciences. He was awarded the prize for actively contributing to raising the level of analysis in economic science.

Samuelson was born on 15th May 1915, in Gary, US, in a family that emigrated from Poland. In 1923, he moved to Chicago, where he began studying economics at the university. He presented his doctoral thesis at Harvard in 1941. Named an assistant professor of economics at the Massachusetts Institute of Technology (MIT) in 1940, Samuelson eventually became an institute professor during his long-time association with the university.





Paul Samuelson

He served as an advisor to two American presidents, John F. Kennedy, and Lyndon B. Johnson. Samuelson was probably the most influential economist of the later 20th century. He wrote the best-selling book 'Economics' in 1948, which was later translated into 20 languages, it was selling 50,000 copies a

year a half century after it first appeared.

Samuelson died on 13th December 2009, at the age of 94.

What were the contributions of James Tobin?

The American economist James Tobin received the Nobel Prize in Economic Sciences in the year 1981 for his analysis of financial markets and their relations to expenditure decisions, employment, production, and prices.

James Tobin was born on 5th March 1918 in the US. He served as a member of President John F. Kennedy's the Council of Economic Advisers, and the Board of Governors of the Federal Reserve System. He was with the University of Yale since 1950.

A collection of his selected articles, 'National Economic Policy', was published in 1966.

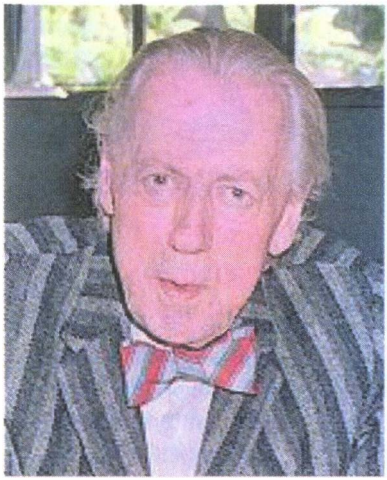
In 1970, Tobin was president of the American Economic Association. Tobin was widely known for his suggestion of a tax on foreign exchange transactions, now known as the 'Tobin tax'. This was designed to reduce speculation in the international currency markets. He died on 11th March 2002, in Connecticut, US.

Youngest Economist

To date, the youngest Nobel laureate in Economic Sciences is Kenneth J. Arrow, who was 51-years-old when he was awarded in 1972.

● *Neeth Mariam*

James Tobin



John Richard Nicholas Stone

Who was John Stone?

Sir John Richard Nicholas Stone was an outstanding figure in post-war British applied econometrics. Stone was born on 30th August 1913, in London.

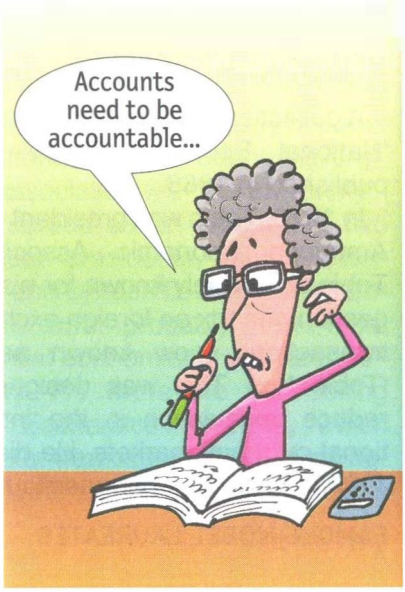
He was an eminent British economist. Stone was educated in Westminster School, and Cambridge University. In 1984, he received the Nobel Prize in Economic Sciences for developing an accounting model that could be used to track economic activities on a national and, later, an international scale.

He visited India along with his father, as his father was appointed as a judge in Madras. He returned to London in 1931.

He is sometimes known as the 'father of national income accounting'. The first official estimates of British national income and expenditures were made according to Stone's method in 1941.

He was co-author with J.E. Meade of 'National Income and Expenditure,' and author of several other works.

He died on 6th December 1991 at the age of 78, in England.



NOBEL LAUREATES IN PHYSIOLOGY OR MEDICINE

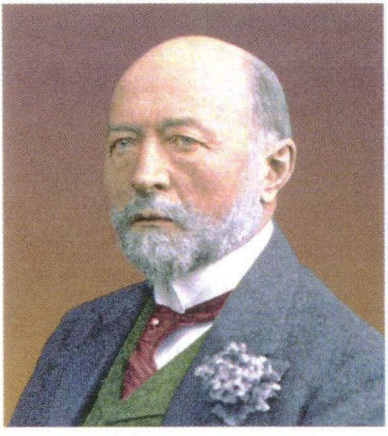
SARS

Why is Emil von Behring ever remembered in the history of Nobel Prizes?

Emil von Behring, German physiologist, was a pioneer in the field of immunology. In 1889, while working at the Institute of Hygiene in Berlin, Behring discovered that it was possible to neutralize bacterial toxins using antitoxins.

Behring was born on 15th March 1854, in West Prussia. He was the first recipient of the Nobel Prize in Physiology or Medicine in the year 1901. He received the prestigious prize for his discovery of a diphtheria antitoxin. He was widely known as a 'saviour of children,' as diphtheria used to be a major cause of child death.

He was mainly a military doctor. His ground-breaking work resulted in the development of blood serums for vaccinations against diphtheria and tetanus, and in modern methods of immunization that have largely eradicated diphtheria worldwide. He, along with Shibasaburo Kitasato, developed the effective therapeutic serum against diphtheria and tetanus. The first successful therapeutic serum treatment of a child suffering from diphtheria occurred in 1891. Behring died on 31st March, 1917.



Emil von Behring

CURIOUS FACT

Awarded to Couples

Gerty Cori and Carl Cori, a married couple, were awarded the 1947 Nobel Prize in Physiology or Medicine. Similarly, to that May-Britt Moser and Edward I. Moser, another couple, also received the Nobel Prize in Physiology or Medicine in 2014.

What were the contributions of Ronald Ross?

The Nobel Prize in Physiology or Medicine 1902, was awarded to Ronald Ross for his work on malaria, by which he has shown how it enters the organism and thereby, has laid the foundation for successful research on this disease and methods of combating it.

Ross was born in Almora, India, and educated in Great Britain. Young Ross was witness to his father falling seriously ill with malaria. In 1881, he became a military medical officer in India. Ronald Ross began working in West Africa in 1899, to find a way to combat malaria.

Ronald Ross

Ronald Ross was the first British Nobel laureate, and the first born outside Europe. He wrote 'The Prevention of Malaria' in 1910.

Ross returned to England in 1899, and joined the Liverpool

School of Tropical Medicine. He was knighted in 1911. In 1926, he became Director of the Ross Institute and Hospital for Tropical Diseases, named in honour of his work.

Ronald Ross died on 16th September, 1932.

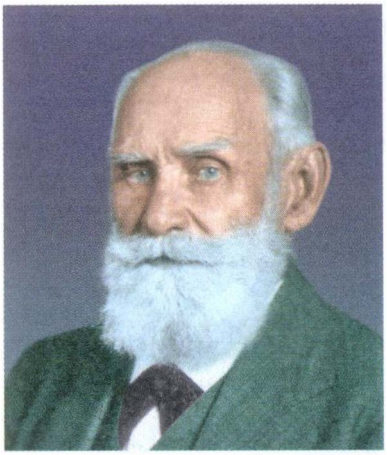
What makes Ivan Pavlov a legendary figure?

Russian physiologist Ivan Pavlov developed his concept of the 'conditioned reflex' through a famous study with dogs, and won a Nobel Prize in 1904, and became the first Russian Nobel laureate.

Conditioned reflex is a response that does not occur naturally, but that may be developed by regular association of some physiologic function with an unrelated outside event, such as ringing of a bell, or flashing of a light.

Soon the physiological function starts whenever the outside event occurs. Pavlov trained dogs to expect food whenever he rang a bell. The dogs eventually produced saliva when they heard the bell ring, without even seeing the food.

He was born on 26th September 1849, in Russia. Pavlov's principles of classical conditioning have been found to operate across a variety of experimental settings, including educational classrooms.

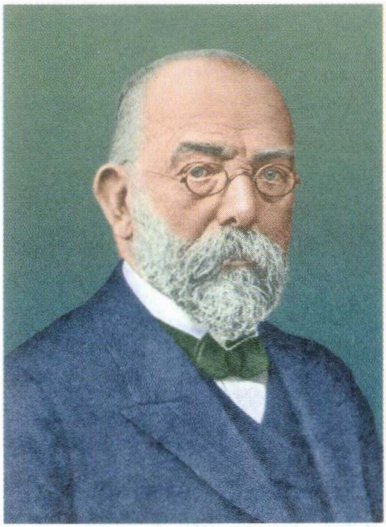


Ivan Pavlov

Starting in 1901, Pavlov was nominated over four successive years for the Nobel Prize in Physiology or Medicine. He did not win, because his previous nominations were not specific to any discovery, but based on a variety of laboratory findings. Pavlov died in Russia on 27th February, 1936.

What were the contributions of Robert Koch?

Robert Koch was a German physician who is widely credited as one of the founders of bacteriology and microbiology. Robert Koch was born on 11th December 1843, in Hanover in Germany.

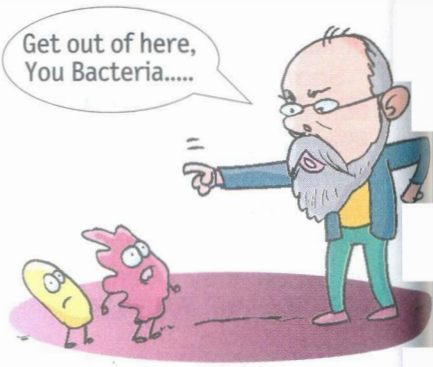


Robert Koch

Koch came from a poor mining family and it took him a lot of determination to get a university place where he first studied mathematics and natural science, and then studied medicine. Koch attended the University of Gottingen, where he studied medicine, graduating in 1866. He then became a physician in various provincial towns.

Koch received the Nobel Prize in Physiology or Medicine in 1905. He discovered the anthrax disease cycle in 1876. Koch found out that the anthrax microbe produced spores that lived for a long time, after an animal had died. He proved that these spores could then develop into the anthrax germs and could infect other animals.

He also developed ways of staining bacteria to improve the bacteria's visibility under the microscope, and were able to identify the bacterial causes of tuberculosis in 1882, and cholera 1883.



When did Alexis Carrel win the Nobel Prize?

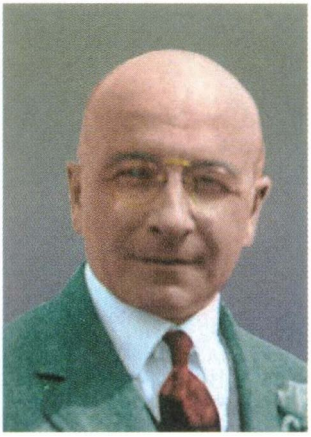
Alexis Carrel, the French surgeon and biologist, was awarded the Nobel Prize in Physiology or Medicine in 1912 for pioneering vascular suturing techniques.

Carrel was born at Lyons, France, on 28th June, 1873. In 1900, he received his formal medical degree from the University of Lyons. He was elected twice, in 1924 and 1927, as an honorary member of the Academy of Sciences of the USSR.

During the first decade of the 20th century, Alexis Carrell developed methods for sewing blood vessels together. These were much required, and a crucial part of surgery. It also laid the groundwork for transplant surgery.

He invented the first perfusion pump with Charles A. Lindbergh opening the way to organ transplantation. During World War I, Carrel and the English chemist Henry Drysdale Dakin developed the Carrel–Dakin method of treating wounds based on chlorine which, preceding the development of antibiotics was a major medical advance in the care of deep wounds.

He died in Paris on 5th November, 1944.



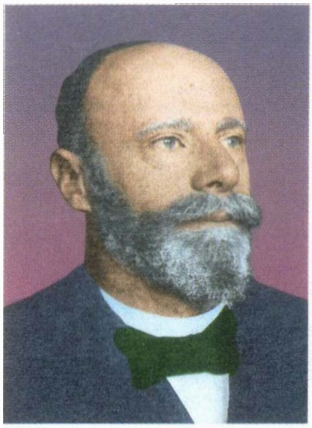
Alexis Carrel

CURIOUS FACT

Nobel Genetics

The most common research field for Nobel Laureates in Physiology or Medicine is genetics. So far, there are 48 Nobel laureates from this field.

● *Ryan Thomas*



Willem Einthoven

Who was Willem Einthoven?

Willem Einthoven was a renowned Dutch physiologist who received the Nobel Prize in Physiology or Medicine in 1924 for inventing the first practical electrocardiogram (ECG). He was born on 21st May 1860, in Semarang on the island of Java, in the former Dutch East Indies (now Indonesia).

In 1885, Einthoven received his medical degree from the University of Utrecht. He became a professor at the University of Leiden in 1886.

In 1902, Einthoven became a Member of the Royal Netherlands Academy of Arts and Sciences. In 1903, Einthoven developed the first string galvanometer. The device could measure the changes of electrical potential caused by contractions of the heart muscle and record them graphically. He is best remembered for this ground-breaking invention, which was the first practical electrocardiograph.

He was awarded the 1924 Nobel Prize in Medicine for his discovery of the mechanism of the electrocardiogram. Einthoven's invention could detect, and record even the minutest electric currents produced by the human heart. Einthoven died on 29th September 1927.

What makes Charles Nicolle a popular Nobel Laureate?

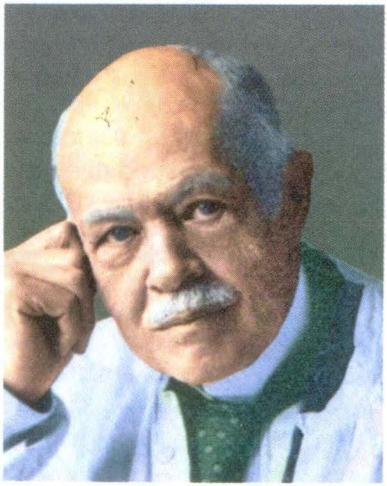
Charles Jules Henry Nicolle was a French bacteriologist who won the 1928 Nobel Prize in Physiology or Medicine for his identification of lice as the transmitter of epidemic typhus. Nicolle was born on 21st September 1866.

After it was established that several diseases, including malaria, were spread by insects, suspicions arose that this might also be the case with typhus fever.

However, Nicolle suspected that the key point of typhus was unhygienic conditions. When patients were bathed, and their clothes were confiscated, the carrier of typhus in the patients' clothes or on their skin could be removed. Charles Nicolle noticed that sick people ceased to infect others when they had an opportunity to keep themselves clean. In 1909, he demonstrated that body lice spread typhus fever by successfully transferring the infection among apes by allowing a body louse to first bite infected,

Record Nomination

Austrian neurologist and founder of psychoanalysis, Sigmund Freud was nominated 32 times for the Nobel Prize in Physiology or Medicine, but never awarded it.



Charles Jules Henry Nicolle

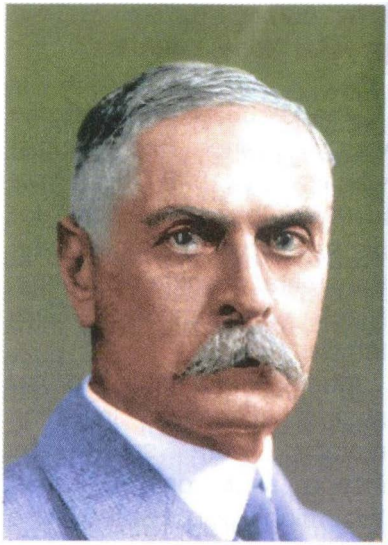
and then uninfected, apes.

Nicolle was an Associate of l'Academie de Medecine. He was awarded the Montyon Prize in 1909, 1912, and 1914. He died in 1936.

What were the contributions of Karl Landsteiner?

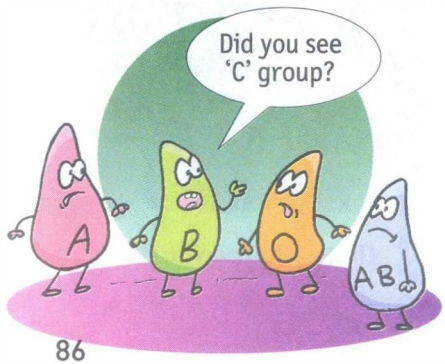
Karl Landsteiner was an Austrian-born American immunologist, physician and pathologist. He was awarded the Nobel Prize in 1930 for Physiology or Medicine for detecting the major blood groups and creating the ABO system of blood typing that revolutionized the process of blood transfusion.

Before him, scientists thought that the blood of every person was the same. Blood transfusion was often considered dangerous. Landsteiner discovered why: when different people's blood was mixed, the blood cells sometimes clotted.



Karl Landsteiner

He announced in 1901, that there were three major human blood groups: A, B and C (which was later called O). One year later in 1902, Landsteiner's three fellow scientists discovered a fourth blood type named AB. He identified the presence of agglutinins in the blood, and identified, with Alexander S. Wiener, the Rhe-



sus factor, in 1937, thus enabling physicians to transfuse blood without endangering the patient's life.

Along with his ground-breaking discovery of blood groups, Landsteiner, Constantin Levaditi, and Erwin Popper discovered the polio virus in 1909.

Landsteiner died of a heart attack in 1943.

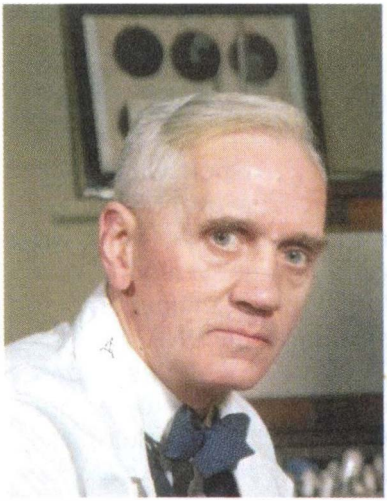
What makes Alexander Fleming prominent among Nobel laureates in Physiology or Medicine?

Alexander Fleming was a Scottish bacteriologist and Nobel Prize winner, best known for his discovery of penicillin.

Fleming was born in Ayrshire on 6th August 1881, the son of a farmer. He moved to London at the age of 13, and later trained as a doctor.

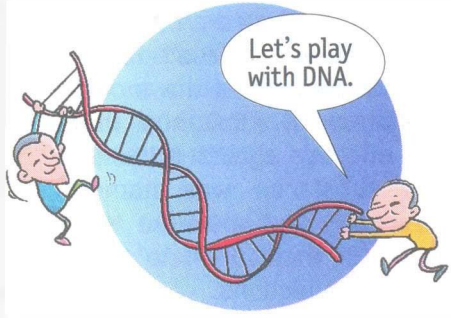
During World War I, he served as a captain in the Royal Army Medical Corps.

In 1928, while studying influenza, Fleming noticed that a mould had developed accidentally on a set of culture dishes being used to grow the staphylococcus bacteria. The mould had created a bacteria-free circle around itself. Fleming concluded that the mould contained a substance that was effective against bacteria. The substance was named penicillin, and became the basis for medication to treat bacterial infections.



Alexander Fleming

Fleming shared the Nobel Prize in 1945 with Howard Florey and Ernst Boris Chain. His invention saved many lives especially during times of war. Sir Alexander Fleming died on 11th March, 1955.



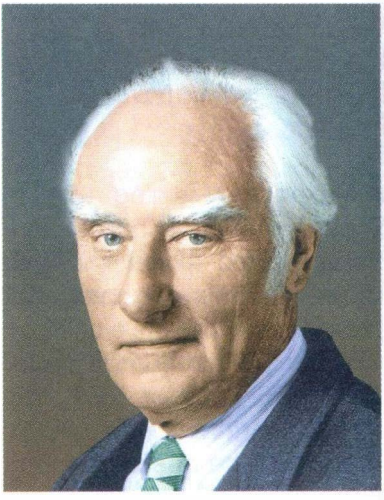
Why are Francis Crick and James Watson considered to be great?

Francis Crick was one of the world's great scientists. He is best known for his work with James Watson, which led to the identification of the structure of DNA in 1953. Their work was based partly on fundamental studies done by Rosalind Franklin, Raymond Gosling, and Maurice Wilkins.

Crick was born on 8th June 1916, in England. He was a British molecular biologist, biophysicist, and neuroscientist.

A critical influence in Crick's career was his friendship, beginning in 1951, with James Watson, who was an American molecular biologist, geneticist and zoologist. Together with Watson and Maurice Wilkins, he was jointly awarded the 1962 Nobel Prize in Physiology, or Medicine.

In 1962, Crick became the director of Cambridge University's Molecular Biology Laboratory,as well as a non-residential fellow of the Salk Institute in California. In 1964,



Francis Crick

he was elected a Foreign Honorary Member of the American Academy of Arts and Sciences.

Crick died in the US on 28tt July, 2004.

INDIAN NOBEL LAUREATES

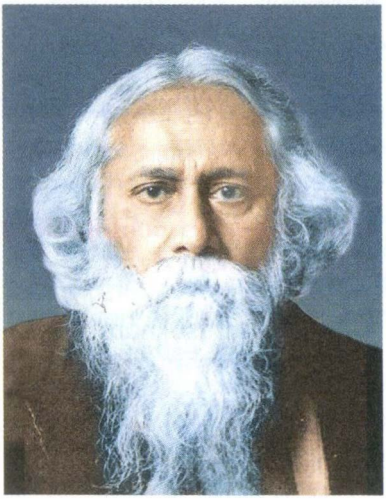
Who was the first Nobel laureate from India?

Rabindranath Tagore, a renowned Indian poet, who became the first Asian poet to be awarded the 1913 Nobel Prize for Literature, for his extraordinary work 'Gitanjali'. He also became the first non-European to win the Nobel Prize in Literature.

Tagore was born on 7th May 1861, in Calcutta, India. He wrote his first poem at the age of six, and as a young boy, studied the classical poetry of Kalidasa.

After a brief stay in England to attempt to study law, he returned to India, and instead, pursued a career as a writer, playwright, songwriter, poet, philosopher and educator.

He authored almost 50 odd volumes of poetry. Tagore's poetic songs were viewed as spiritual and mercurial. Initially, Tagore wrote his poems in his native language Bengali. Later, his works were translated into foreign languages. Gradually, he became well known in the West. In fact he toured many countries, and delivered many lectures on international platforms.



Rabindranath Tagore

In 1950, his song 'Jana Gana Mana,' was adopted as India's national anthem.

C.V. Raman

What were the contributions of C. V. Raman?

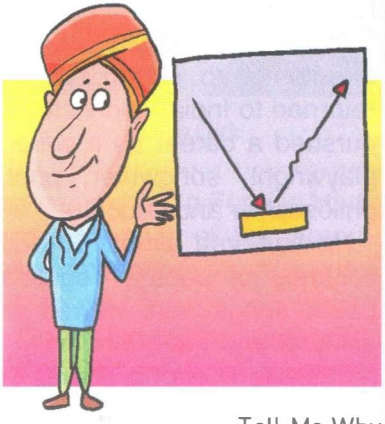
Sir Chandrasekhara Venkata Raman was an Indian physicist, who became the first Indian to win the Nobel Prize in Physics.

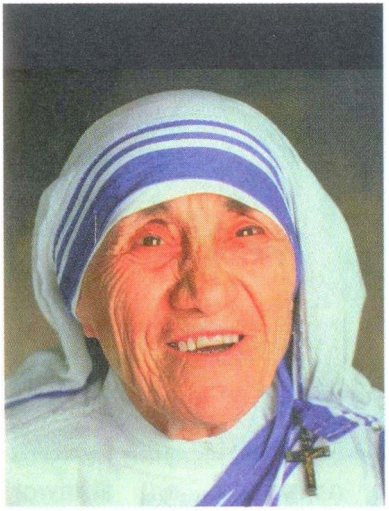
C.V. Raman was born in the former Madras Province in British India, presently the state of Tamil Nadu.

He carried out ground-breaking work in the field of light scattering, which earned him the 1930 Nobel Prize in Physics. Raman led experiments at the Indian Association for Cultivation of Science with collaborators, including K. S. Krishnan, on the scattering of light. He discovered that, when light traverses a transparent material, some of the deflected light changes in wavelength. This phenomenon is now called Raman scattering and is the result of the Raman Effect.

Raman was president of the 16th session of the Indian Science Congress in 1929. He was conferred a knighthood, and medals and honorary doctorates by various universities.

In 1954, India honoured him with its highest civilian award, the Bharat Ratna. Raman died in 1970, in Bangalore, at the age of 82.





Mother Teresa

What made Mother Teresa prominent among the Nobel laureates of India?

Mother Teresa was the founder of the Missionaries of Charity, dedicated to helping the poor. Considered one of the 20th Century's greatest humanitarians, she was canonized as Saint Teresa of Calcutta in 2016.

Mother Teresa was born Agnes Gonxha Bojaxhiu in Skopje, Macedonia, on 26th August 1910. But she later moved to India, where she lived for most of her life.

The Missionaries of Charity came into being on 7th October 1950, in Calcutta, with the Vatican decree recognising the diocesan congregation. Mother Teresa proceeded with the aim to care for the hungry, the naked, the homeless, the crippled, the blind, the lepers, and all those people who feel unwanted, unloved, uncared. It had over 4,500 sisters, and became active in 133 countries by 2012.

She received the Padma Shree in 1962 and the Bharat

Not Indian...

There are many Nobel Laureates who were either born in British India, or were of Indian origin, but subsequently, were not citizens of India. Some of them are Har Gobind Khorana, Subrahmanyan Chandrasekhar, and Venkatraman Ramakrishnan.

Ratna in 1980. She was awarded the Ramon Magsaysay Award for Peace and International Understanding in 1962.

Mother Teresa accepted the Nobel Peace Prize in 1979.

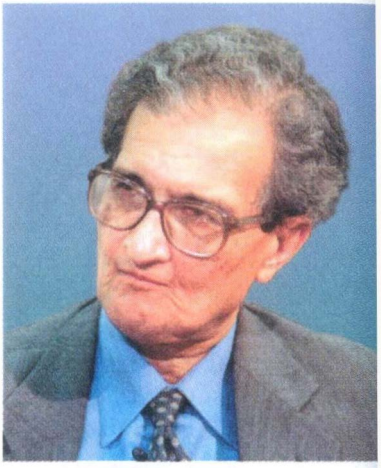
Who is Amartya Sen?

Amartya Kumar Sen is the 1998 Nobel prize-winner in economics. He is a well-known economic theorist whose works link ethical questions with economic issues.

Sen was born in Santiniketan, West Bengal. In 1956, at the age of 23, he was appointed as the Professor and head of the Economics Department at the Jadavpur University, Calcutta.

After two years, he went to Cambridge University to pursue his Ph.D In 1959, he submitted his Ph.D thesis titled 'the choice of techniques', after which he was a visiting Professor at Massachusetts Institute of Technology.

From 1961 to 1972, he was a Professor at the Delhi School of Economics, after which he was a Professor of Economics at the London School of Economics. Since 1972, had taught and worked in the United Kingdom and the United States.



Amartya Sen

Sen has made contributions to welfare economics, social choice theory, economic and social justice and economic theories of famines.

In 1999, he was awarded the Bharat Ratna, which is the highest civilian award in India.

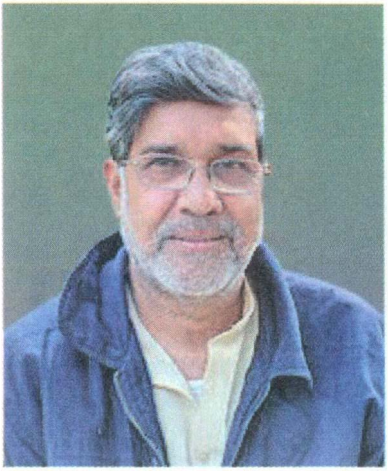
Why is Kailash Satyarthi a popular Nobel laureate?

Kailash Satyarthi is a renowned Indian child rights

activist and the winner of the Nobel Peace Prize in 2014.

Satyarthi was born on 11th January 1954, in Vidisha, Madhya Pradesh. An electrical engineering graduate, Satyarthi, started a journal called 'The Struggle Shall Continue' in 1980 in order to create awareness about the problem of child labour.

Satyarthi is the founder of the Bachpan Bachao Andolan, an organization dedicated towards the eradication of child labour and rehabilitation of the rescued former child workers. The organisation acts to protect the rights of more than 83,000 children from 144 countries. The success of this organisation led to the creation of the South Asian Coalition on Child Servitude (SACCS) in 1989. SACCS has till date liberated several thousands of child labourers working in different industries.



Kailash Satyarthi

His work is recognised through various national and international honours and awards including the Nobel Peace Prize of 2014, which he shared with Malala Yousafzai of Pakistan.

NOBEL LAUREATES 2017

PEACE

Logo of ICAN

The 2017 Nobel Peace Prize has been awarded to the International Campaign to Abolish Nuclear Weapons, or ICAN. The nuclear disarmament group has won the prize for its campaign to rid the world of the atomic bomb, and for its ground-breaking efforts to achieve a treaty-based prohibition of such weapons.

LITERATURE

The Nobel Prize in Literature 2017 was awarded to British novelist Kazuo Ishiguro for his influential literary career.

Kazuo Ishiguro

PHYSICS

The Nobel Prize in Physics 2017 was won by Rainer Weiss, Barry C. Barish and Kip S. Thorne. They won the coveted prize for their contributions to the LIGO detector, and the observation of gravitational waves.

Barry C. Barish

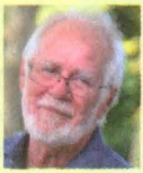
Kip S. Thorne

Rainer Weiss

CHEMISTRY

Richard Henderson

Joachim Frank



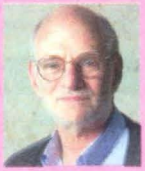
Jacques Dubochet

For developing cry-electron microscopyfor the high resolution structure determination of biomolecules in solution, Jacques Dubochet, Joachim Frank and Richard Henderson won the Nobel Prize in Chemistry this year.

PHYSIOLOGY & MEDICINE

The Nobel Prize in Physiology and Medicine, 2017 was won by Jeffrey C. Hall, Michael Rosbash and Michael W. Young. They won the prestigious award for their discoveries of molecular mechanics controlling the circadian rhythm.

Jeffrey C. Hall



Michael Rosbash

Michael W. Young

ECONOMIC SCIENCES

Richard H. Thaler won the Nobel Prize in Economic Sciences this year for his contributions to behavioural economics.

Richard H. Thaler

E.C.G Sudarshan

A CONTROVERSY

E.C.G Sudarshan, an Indian physicist, has been passed over for the Physics Nobel Prize on more than one occasion. In 2005, Roy Glauber won the Nobel Prize in Physics for his contributions in quantum optics primarily for Sudarshan-Glauber representation. Though Glauber was acknowledged for his effort by the Academy, Sudarshan was not considered. This stirred up a controversy in the scientific world.

FREEDOM QUIZ WINNERS

'The Freedom Quiz' in the August issue of Tell Me Why was a special contest with 25 winners. The first ten lucky winners were announced in the October issue. Here is the list of the remaining 15 winners.

1. **Bhavamanyu Gokul**
Rajkot, Gujarat.
2. **Gayathri Bijumon**
Kochi, Kerala.
3. **Aditya Kalia**
Manimajra, Chandigarh.
4. **Ashok Kumar Kushwaha**
Bhopal, Madhya Pradesh.
5. **Alrich P. Felix**
Thrissur, Kerala.
6. **Dorothy Phukon**
Jorhat, Assam.
7. **Shashank Pandey**
Giridih, Jharkhand.
8. **Isha Prashant Pisal**
Thane, Maharashtra.
9. **Subhiksh V.K.**
Coimbatore, Tamil Nadu.
10. **Pratyush Kumar Singh**
Gopalganj, Bihar.
11. **Achyut Ghosh**
Bhopal, Madhya Pradesh.
12. **Bhanu Prakash Suthar**
Bikaner, Rajasthan.
13. **Isha Prabhu**
Karwar, Uttarakand.
14. **Divyank Thakur**
Shimla, Himachal Pradesh.
15. **Harshit Kumar**
Pithoragarh, Uttarakand.

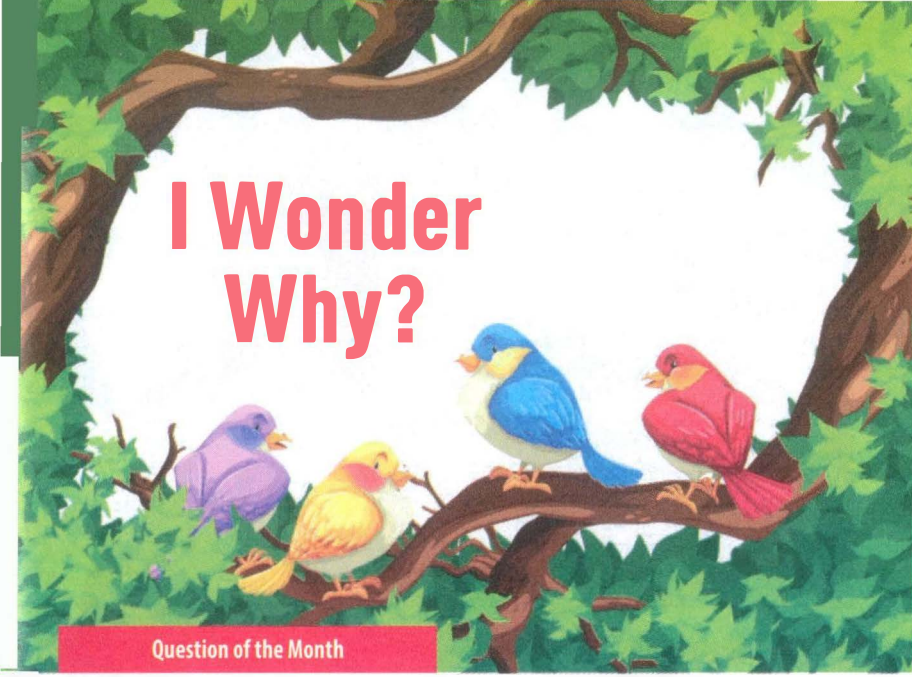
CLASSIC CONTEST WINNERS

Winners of the Classics Contest held in October issue of Tell Me Why.

1. **Souhardya Dutta**
Kolkata, West Bengal.
2. **Sindu Sunil,**
Thrissur, Kerela.
3. **Sabyasachi Mohanty**
Jharsuguda, Odisha.
4. **Puneet Raj**
Paschim Vihar, New Delhi.
5. **Jananavardhini**
Bengaluru, Karnataka.
6. **Siddharth Garg**
Ghaziabad, Uttar Pradesh.
7. **Nathan Dave Gomes,**
Shiroda Ponda, Goa.
8. **Sonia Sulania,**
Jaipur, Rajasthan.
9. **Nagma Nisha Nanda**
Bolangir, Odisha.
10. **Vedant Kaushik,**
Patna, Bihar.

ANSWERS

1. Gunter Grass 2. Boris Pasternak
3. Erich Maria Remarque
4. George Orwell 5. Margaret Mitchell
6. Joseph Heller



I Wonder Why?

Question of the Month

"Why are birds that nest in trees not affected by carbon dioxide produced by the same trees at night?"

Since trees emit a sizeable amount of carbon dioxide during respiration, its surprising that birds that roost in them at night, are not affected by this. This is because carbon dioxide makes up only about 0.033 per cent of the air that living creatures breathe.

Air consists of a composition of gases, the main constituents being nitrogen and oxygen. Nitrogen makes up about 78 percent of air, oxygen, almost 21 percent. Though trees release carbon dioxide when they breathe, there is still a large amount of oxygen circulating freely in the atmosphere. So, there is no chance of any living creature getting suffocated by the carbon dioxide produced by trees.

Question sent by:
Vivek Menon, Mumbai.

Send us your questions
E mail: **tellmewhy@mmp.in**

NEXT ISSUE

OUR PRESIDENTS

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